

INSTRUCTIONS FOR PREPARING A PROPOSAL, THESIS, AND DISSERTATION¹

INTRODUCTION

The term thesis refers to the written manuscript submitted as a requirement for an M.S. degree at Florida Tech, and the term dissertation refers to that submitted for a Ph.D. degree. To avoid being cumbersome, the word thesis will be used throughout this guide for both. An example of a Dissertation Proposal in Biological Sciences is found in the OEMS [Forms and Documents](#) page as well.

The purpose of a graduate thesis in the sciences is to show others in your field that you are now capable of not only conducting original research but also communicating the results effectively to the scientific community. Your thesis will very likely be your first publication in the field, and as such becomes an especially important landmark in your career. A well-prepared thesis makes the resulting journal articles much easier to produce, lends a sense of credibility to the material, and, in general, reflects well on the department and university. Conversely, a thesis with misspellings, poor grammar, technical inconsistencies, and poorly prepared illustrations will make the preparation of any resulting journal article tedious, will make the reader wonder if the attention to scientific detail is equally sloppy, and will reflect poorly on the department and university and particularly the student.

CHOICE OF SUBJECT

Selecting a subject worthy of investigation is one of the most significant aspects of your graduate work. Such a topic should never be chosen without thoughtful consideration on your part and the approval of your graduate advisor.

The thesis must reflect a comprehensive understanding of the pertinent literature (which must be properly cited) and must express clearly and grammatically the method, significance, results, and interpretation of your research. The length of the completed manuscript should be no longer than is necessary to present all pertinent information. This length will, of course, vary widely depending on the research topic, nature of data, and the degree being sought.

The thesis should be a single unit of scholarly narrative, properly supported and documented, reporting your original work done under the supervision of a member of the graduate faculty (the advisor).

PROPOSAL PREPARATION

GENERAL INFORMATION. After preliminary approval by the advisor, one copy of the research proposal must be submitted to each member of your advisory committee. The proposal is a formal description of your projected research. It is designed to offer you an opportunity to demonstrate your ability to pursue the projected topic to a successful conclusion. The nature of the problem to be examined, the status of current research relating to the subject under consideration, the research method, the budget and the importance of the projected work should

¹ Also see the on-line thesis and dissertation formatting information provided by the [Florida Tech Library](#).

be carefully described in the proposal. A timeline or milestone chart indicating tasks and when they are to be completed should also be included. See p. 21 for additional information on proposal preparation. The Dissertation proposal should be a National Science Foundation (NSF) style proposal, which does not exceed 15 pages, presented in font that is no smaller than 12 point. All rules of style and format (such as those pertaining to word processing, references, and footnotes) that apply to the completed thesis also apply to the proposal.

THESIS PREPARATION

STANDARDIZING PAGE AND TEXT FORMATS. This manual is to be used as a style guide in answering questions regarding the text and page format of theses. The purpose behind these specifications is to achieve a uniform, consistent and professional appearance in all theses produced in the Department of Ocean Engineering and Marine Sciences at Florida Tech.

The formatting rules in this guide have been modeled after, and adapted from, two well-known style manuals:

1. Miller JI, Taylor BJ. 1987. *The thesis writer's handbook*. West Linn (OR): Alcove. 322 p.
2. [CBE] Council of Biology Editors, Style Manual Committee. 1994. *Scientific style and format: the CBE manual for authors, editors, and publishers*. 6th ed. Cambridge (UK): University of Cambridge. 825 p.

These references should be consulted when questions arise that are not specifically covered by this manual. Use *The thesis writer's handbook* for page style and format questions concerning the title page, approval page, the abstract, introduction, etc., and text format requirements for spacing, margins, indentations, etc. Use the *CBE style manual* for style and format questions concerning citing references in the text, list of references, illustrations (figures and tables), the use of units, and proper abbreviations.

Do not use past theses as examples of format and style. Not all theses have followed the rules, and the rules have changed over the years.

Word Processor Specifications. Select a 12 pt font with a plain-face type (Times New Roman or Square Serif) rather than script, italic, or some other ornamental style when printing your thesis. If there is doubt about the size or style of type, clarify the matter with the Department Head before preparing the manuscript. The same type style must be used throughout the paper; do not mix type styles; do not use bold face type for headings or legend titles. The font size must also be the same, including page numbers; but superscripts and subscripts may be struck in 10 pt font. Italics may be used for generic and specific names of organisms and anywhere italics are normally used (e.g., genes). The printer must produce letter-quality print, superscripts, and subscripts. A laser printer or other high-quality printer must be used. Do not justify the right margin; not all word processors do a good job without leaving very irregular spacing within the text line.

Paper. Print your thesis on at least 20-pound white paper (e.g., standard xerographic paper), not on lightweight paper or onionskin, since this will not feed automatically through a photocopier.

Spacing and Indentions. The text is double spaced throughout. Headings or the first line of text will begin 2 spaces below the page number. In preliminary pages, the text ends 2 spaces above the page number. Single spacing (six lines per inch) is used only for specific, appropriate purposes, such as blocked inset quotations, itemized or tabular materials, figure and table legends, and literature cited (single space within the citation, double space between citations). Additional instructions on spacing are given in other sections.

The first sentence of each paragraph should be indented five spaces or 0.5 in indentation. Any quotation of six typed lines or fewer should use the same spacing as the narrative text. Quotations longer than six typed lines should be inset and single-spaced. Inset quotations do not require the use of quotation marks.

Margins. All typing and page numbers must fit within the margins (1.5 inch at the left, and 1.0 inch at the top, bottom, and right). If Microsoft Word is used, the following margin set up is recommend for all pages (including preliminary pages): top, 1.3 inch; bottom, 1.3 inch; left, 1.7 inch; right, 1.2 inch; header (where page number is printed in body), 1.0 inch; footer (where page number is printed in preliminary pages), 1.0 inch; gutter 0 inch. In addition to leaving one or two spaces around the margin to allow for expansion normally associated with the duplication process, this page setup gives the appearance of double spacing between the text and page numbers. All computer data, illustrations, and tables that lend themselves to reproduction on photographic or other acceptable paper must conform to the margins.

Pagination. Every page in the manuscript EXCEPT the title page and the approval page must be numbered. These 2 pages are considered to be pages. i and ii, but no pagination numeral is shown on these 2 pages.

- Preliminary pages--lowercase Roman numerals (iii, iv, v, vi, etc.) are used. The first page on which a number appears is the abstract page, which is numbered iii and is placed right after the approval page.
- Text and supplementary pages--Arabic numerals are used. The first page of the narrative text begins with 1, and the numbering runs consecutively to the end of the manuscript.
- Pages are numbered consecutively, as are tables, figures, and equations. The only exception to this rule is when an appendix has tables, figures, and equations (i.e., Table A-1).

Begin every major division of a thesis on a new page. These major divisions are: Abstract, Dedication (optional), Acknowledgments, Table of Contents, List of Tables, List of Figures; each new section such as Introduction, Materials and Methods, Results, Discussion, Conclusions, Literature Cited, and Appendix.

Subheadings or subdivisions within chapters and sections do not start on a new page but are placed on the page wherever they appear in the development of the text. The only exception is when this produces what is termed an "orphan" (i.e., the last line of the page is the heading itself). In this case, start the heading on the following page.

Placement of Page Numbers. All preliminary page numbers (lowercase Roman numerals) are centered on a line 1.0 in from the bottom edge of the page. All other page numbers (Arabic numerals) are placed on a line, 1.0 in from the top of the page and even with the right-hand margin.

PARTS OF THE MANUSCRIPT. A thesis manuscript ordinarily has three main parts: (1) the preliminary pages, (2) the text, and (3) the supplementary pages.

Preliminary Pages. Include (listed in the order in which they appear in the thesis):

- Title page
- Approval page
- Abstract
- Acknowledgments (the Dedication page, if any, is placed directly before the Acknowledgments page)
- Table of Contents
- List of Tables (if more than one table is used)
- List of Figures (if more than one figure is used)

The Text. Includes (listed in the order in which they appear in the manuscript):

- Introduction
- Body of the thesis with the large divisions (Materials and Methods, Results, Discussion and/or Conclusion.)

Supplementary Pages. Include (listed in the order in which they appear in the manuscript):

- Literature Cited (required in all theses and dissertations)
- Appendices (if needed).

All preliminary page titles, all chapter designations and titles, and supplementary page titles are centered at the top of the page (two spaces below the page number) and are typed in capital letters. Section titles (when used in place of chapters) are typed in capital letters and are centered at the top of the page (two spaces below the page number). Examples of some of the major parts of the manuscript are presented in Fig. 1- 4. Figures are for style, spacing, and format information only. They are not to be used as page or margin templates. Page setup and margins are considered in other sections of this guide.

Title Page. The title page must follow exactly the style, spacing, and form of the example in Fig. 1. Points to note particularly are:

- The title is typed in capital letters, double spaced (if the title is more than one line in length) and centered within the margins of the paper in an inverted pyramid style.
- There is no page number on the title page (although it is considered to be p. i).
- For the M.S. degree, the term `Thesis' is used instead of `Dissertation'.
- The full legal name of the author, without initials and without designation of profession, military rank, or marriage is listed as shown.

- The full name of the degree to be awarded (MASTER OF SCIENCE or DOCTOR OF PHILOSOPHY) and the major department (OCEAN ENGINEERING AND MARINE SCIENCES) are written out in capital letters.
- Degrees are awarded in May and December. The appropriate month and year must be shown on this page.

Approval Page. The approval page, following exactly the style, spacing, and form of the example shown in Fig. 2, must bear the original signatures of all members of your advisory committee and the Department Head. Care should be taken to assure that they sign in black ink, since other colors do not reproduce well.

The number of members of your advisory committee determines the number of signature spaces on the page. The position (in terms of the committee) of each member of the committee must be indicated under each signature. The committee as listed on this page must include all the names indicated as being committee members on the exam announcement for the defense.

Particular points to note are:

- The title is typed in capital letters, double spaced (if more than one line on length) and centered within the margins of the paper in the inverted pyramid style.
- The line "Approved as to style and content by:" is lined up with the signature line, not centered.
- There is no page number on the approval page (though it is considered to be p. ii).
- For the Ph.D. degree, the word "DISSERTATION" is used instead of "THESIS".
- Your full legal name without initials and without designation of profession, military rank, or marriage is listed as shown.
- If your committee has co-chairpersons, then each is listed by position as "Co-chairperson" of the committee.
- If the Department Head serves also as a member or as chairperson or co-chairperson of your advisory committee, so indicate.
- Degrees are awarded in May and December. The appropriate month and year must be shown at the bottom of the approval page.

TITLE OF DISSERTATION

IN CAPITALS

By

YOUR NAME IN CAPITALS

B.S., University Name

M.S., University Name

A dissertation submitted to the Department of Ocean Engineering and Marine
Sciences of Florida Institute of Technology in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

in

PUT YOUR SUBJECT AREA HERE

Melbourne, Florida

May 2019

TITLE OF THESIS

IN CAPITALS

A THESIS

By

YOUR NAME IN CAPITALS

Approved as to style and content by:

Robert Weaver, Ph.D. Chairperson
Associate Professor
Department of Ocean Engineering and Marine Sciences

Eraldo Ribeiro, Ph.D.
Professor
Department of Computer Engineering and Sciences

Stephen Wood, Ph.D.
Associate Professor
Department of Ocean Engineering and Marine Sciences

Richard B. Aronson, Ph.D.
Professor and Head
Department of Ocean Engineering and Marine Sciences

May 2019

ABSTRACT

A STUDY OF THE PHILOSOPHY OF RESEARCH FROM THE
NINETEENTH CENTURY TO THE PRESENT TIME

by Donald Jay Lee, B.A., Central College;
M.S., Glenn State University

Chairperson of Advisory Committee: Joseph S. Guy, Ph.D.

The text of the Abstract starts on this line with a 1/2 inch (5 spaces) indentation.

Table of Contents. The table of contents indicates the major divisions and principal (or second-order) subheadings of the manuscript. It should provide an analytical presentation of the materials in the study and page numbers on which the sections start. Preliminary page listings in the table of contents start with the abstract (iii) and must include all preliminary pages (inclusion of the table of contents page itself is optional).

All divisions of the text (i.e., chapters or sections) and subheadings within each chapter or section must be listed in the Table of Contents. The appropriate spacing, indentions, and capitalization should show the subordination of the subheadings. The table of contents at the beginning of this guide can serve as an example.

All supplementary pages (literature cited and appendices, if any) must be listed in the table of contents. The numbering, wording, and pagination of titles and headings must be exactly the same in the table of contents as they are on the pages of the manuscript.

Text. An example of page and text formatting is shown in Fig. 4. The text may be divided into chapters or sections. Chapters are used only when the thesis or dissertation topic consists of two or more distinctly separate subjects that cannot be combined. Each chapter is complete; i.e., each chapter has its own section headings. The literature cited sections, however, may be combined.

Chapters are designated by uppercase Roman numerals used consecutively throughout the narrative. Each chapter begins on a new page. The chapter designation (e.g., CHAPTER I) in capitals should be centered within the margins at the top of the page. The chapter title also is in capitals and is centered a double space below the chapter designation. All chapter titles of more than one line in length should be single-spaced. The section heading INTRODUCTION is centered on the margins, 3 spaces below the chapter title and the text begins 3 spaces below the section heading. In addition to an introduction, each chapter may include methods and materials, results, and discussion sections, each beginning on a new page. After all the chapters have been presented, a CONCLUSIONS section should begin on a new page with the heading centered and in capitals. Following conclusions, the LITERATURE CITED section should begin on a new page with the heading centered and in capitals. Each chapter or each section begins on a new page. Subdivisions within these sections or chapters do not begin on a new page. Use a system of subdivisions within the sections or chapters as in the example in Fig. 4.

If the chapter format is selected for the thesis or dissertation, it is suggested that the Department Head be consulted early in the planning for this format.

SECTION HEADINGS
ARE IN ALL CAPITAL LETTERS, AND CENTERED

Theses are generally organized into sections with each section covering a portion of the thesis topic. Examples may be the headings of the preliminary pages (e.g. ABSTRACT, ACKNOWLEDGMENTS, TABLE OF CONTENTS, LIST OF FIGURES, LIST OF TABLES) or, as in the main body of the thesis, the INTRODUCTION, MATERIALS AND METHODS, RESULTS, DISCUSSION, CONCLUSIONS, and LITERATURE CITED. If the section heading is more than one line, the lines can be of different length and single spaced.

Theses may also be organized into chapters if the topic is sufficiently diverse to warrant it. If this organization is used, the chapter number heading is capitalized and placed as shown above with the section heading 2 spaces below the chapter number heading. Chapters are numbered in roman numerals. Each chapter will have its own introduction, materials and methods, results, discussion, and conclusions sections. A common literature cited section however should be used.

The main body of the thesis is double spaced, and begins three spaces below the section heading.

SECOND-ORDER HEADINGS

Second-order headings are typed in capital letters, flush with the left margin, and on a separate line. The text begins 2 spaces below second-order headings

THIRD-ORDER HEADINGS. This heading is typed in capital letters, underlined, indented, and in line with the text.

Fourth-Order Headings. This heading is typed in capital and lower-case letters, underlined, indented, and in line with the text.

Tables and Figures. Tables and figures must be able to stand alone without benefit of the text. The titles, legends, and symbols must be sufficiently complete so that a reader can understand and interpret the data without the need to refer to the text for explanation. No part of a table or figure can encroach into a margin, including captions, labels, etc. Tables and figures should be placed as close as possible after the first reference made to them in the text. For a short table or small figure, this may be on the text page itself, in which case it should be separated from the text by triple spacing at the top and bottom. A full-page table or figure should be placed on the page following the first reference to it. Subsequent references in later sections to a given table or figure should include the page number in parentheses--e.g. "... as in Fig. 3 (p. 3)."

Each table or figure in the main body of the thesis must have a number and a title. Titles should appear at the top of tables (Table 1) and at the bottom of figures (Fig. 5) leaving 2 spaces between the illustration and the title. Titles should be preceded by the word "Table", or "Figure", followed by an Arabic number and a period. The first word of the title is capitalized, and the title ends with a period. Titles of more than one line are typed single-spaced with a hanging indent, the second and subsequent lines aligned with the first letter of the title. The numbering should be consecutive from the beginning through to the end of the thesis. In this regard, you have two basic choices of format: (1) number the tables or figures consecutively (i.e., Table 1, Table 2, Table 3, etc.) throughout the entire document (except for the appendix); or (2) use a dual number system in which tables are numbered consecutively within each chapter and in which each number is preceded by the chapter number (i.e., Table I.1, Table I.2, Table I.3, etc. in Chapter I, and then Table II.1, Table II.2, Table II.3, etc. for Chapter II). Any references to figures or tables from previous chapters should include both the complete designation and page number (e.g., Table II.2, p. 47). When there are tables and figures in the appendix, they should be numbered Table A-1, Table A-2, etc. in Appendix A and Table B-1, Table B-2, etc. in Appendix B. When tables or figures in the Appendix are referenced in the text, the page number, in parenthesis, must accompany the reference--e.g., "...as in Table B-2 (p. 276)."

All titles and page numbers must be in the same typeface as the body of the text and be full-size regardless of any reduction made of the original illustration image.

Titles should be as concise as possible, but they should clearly describe the content of the table or figure. If two or more titles would otherwise be identically worded, then you must incorporate some differentiating word or phrase into each.

If tables (or illustrations) must be placed sideways on the page (landscape orientation), then the top of the table (or illustration) should be at the binding side of the paper. Tables too long or too wide for a single page, landscape or portrait), may be continued on the following right-hand pages(s). The table title should not be repeated. The heading should read "Table 4. Continued" and column and row headings must be repeated for continued tables.

Tables too long to conform to minimum margins may be typed in a smaller font. The page number, table number, and title should be in the same font size as the text of the document.

Table 1. Caloric density for major prey types of *Dasyatis sabina*. Data expressed as mean \pm standard error. Number of species analyzed per taxon or ophiuroid disks from April, August, and December samples indicated in parentheses. The number of subsamples per species was 10. Ash free dry weight (AFDW).

Taxon	Caloric Density (cal/mg AFDW)
Amphipods	5.03 \pm 0.31
Isopods	4.78 \pm 0.07
Ophiuroid Disks (3)	5.31 \pm 0.42
Mysids (1)	5.98
Polychaetes (5)	5.72 \pm 0.46
Bivalve Bodies (2)	5.59 \pm 0.17
Species (17)	5.40 \pm 0.41

From Bradley (1996)

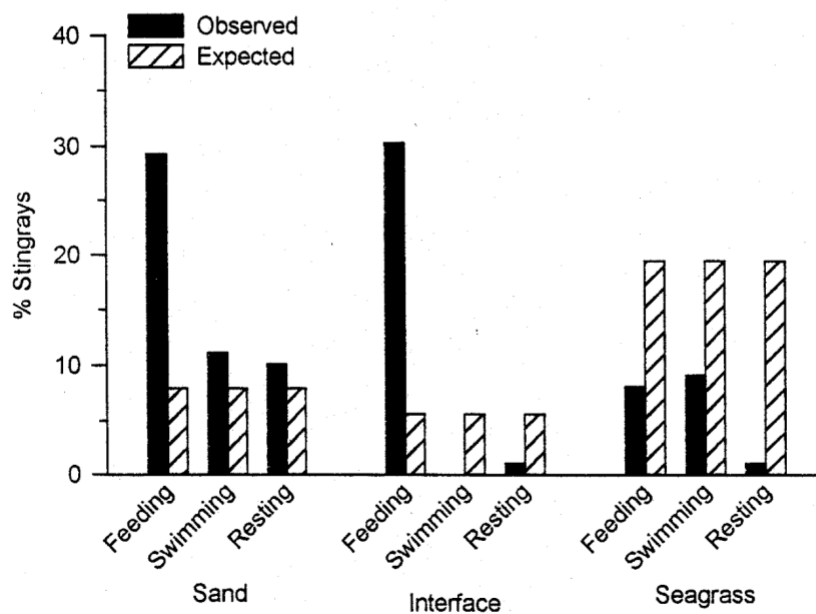


Figure 5. Percentage of stingrays engaged in the three activities: feeding, swimming, and resting within the three subhabitats: sand, seagrass, and interface. Data expressed as percent total stingrays observed (dark bars) and percent total stingrays expected (hatched bars). From Bradley (1996).

List of Tables and List of Figures. The titles of all tables and figures must be single spaced and transcribed exactly (with their numbers) and in order on the list of tables and list of figures, respectively. When a title is exceptionally long, you may transcribe the first 2 lines in the list of tables or figures providing that the 2 lines clearly indicate the content of the table or figure and adequately differentiate between that title and those of other tables or figures. Do not include the figure or table legend in the list of tables or figures. Double space between each table and figure listed.

A list of figures or list of tables page is not necessary when the paper contains only 1 table or figure.

Preparation of Figures. Care and some forethought should be given to preparing the illustrations for your thesis. Color should be used if interpretation of the illustration is enhanced by its use. To make your figures as effective as possible, try to refrain from packing too much information into one graph. Usually only about nine symbols for different curves can be distinguished (Xs and open and closed circles, squares, triangles, and inverted triangles) on one graph. Be careful to ensure that your image is of sufficient resolution – with no distortion or pixilation!

Placing Figures in the Manuscript. All materials must observe the margins restrictions.

Figure legends should be single spaced on the same page as the figures. Legend orientation must agree with the orientation (portrait or landscape) of the figure. The page on which the figure appears is numbered consecutively, with the page number placed in its usual position. On the List of Figures page, the number of the page on which the figure appears is the page number that is to be recorded opposite the figure number and title.

Citing References in the Text. No reference should be included in the thesis unless it can be verified against the original document. Practices for citing references in the text vary widely from journal to journal. The system adopted by this manual is the Name and Year system (N-Y) sometimes known as the Harvard System. This system requires you to cite the name(s) of the author(s) and the year of the publication in the text. The placement of the parentheses depends on the sentence structure.

One Author: Clark (1992) or (Clark 1992)

Two Authors: Clark and Jensen (1982), (1984) or (Clark and Jensen 1982, 1984)

Three or more Authors: Clark et al. (1990) or (Clark et al. 1990)

If the author(s) and the year are identical for more than one reference, insert lowercase letters in alphabetical succession after the year.

Clark (1992a) or (Clark 1992a)

Clark (1992b) or (Clark 1992b)

If two or more citations are used to document a single observation, separate them by a comma.

(Clark and Jensen 1982, Clark et al. 1990)

Taxonomic authorship is not a citation of literature. In such cases, follow the rules for punctuation in botanical and zoological nomenclature. For example, in the sentence, The apple snail *Ampullaria pinei* Dall, 1898 was originally described from the Homosassa River, but *Pomacea paludosa* Say, 1829 was described from the St. Johns River. Neither Dall nor Say is included in the literature cited section.

Literature Cited. The system of referencing the sources of information used in the thesis must follow the N-Y (name, year) style shown in the CBE Style Manual. Bibliographical entries should include only those sources of materials cited directly in the text of the thesis. The references should appear in a list at the end of the document entitled LITERATURE CITED. References to articles accepted for publication but not yet published and to unpublished documents held in a library or archival collection accessible to the public may also be listed in this section. Other unpublished material or personal communications not accessible to the scientific public are identified in statements within the text.

Information for a bibliographic reference should be taken from the original of the work being cited. Examples listed below for standard journal articles, books and monographs, technical reports, conference proceedings and theses and dissertation, should be followed. Please refer to the CBE Style Manual for other examples not given.

Standard Journal Article:

Clark KB, Jensen KR. 1982. Effects of temperature on carbon fixation and carbon budget partitioning in the zooxanthellal symbiosis of *Aiptasia pallida* Verrill. *J Exp Mar Biol Ecol* 64:215-30.

Clark KB, Jensen KR, Stirts HM. 1990. Survey for functional kleptoplasty among West Atlantic Ascoglossa (=Sacoglossa) (Mollusca: Opisthobranchia). *Veliger* 33:339-45.

Defreese DE. 1987. Burrowing activity and population biology of *Ascobulla ulla* Marcus. *Veliger* 30:36-41.

Chapter in a Book:

Clark KB. 1992. Plant like animals and animal like plants: symbiotic coevolution of Ascoglossan (=Sacoglossan) molluscs, their algal prey, and algal plastids. In: Reisser W, editor. *Algae and symbioses*. Bristol (UK): Biopress Ltd. p 515-530.

Textbook:

DeRobertis ECP, Saez FA, DeRobertis EMF Jr. 1975. *Cell biology*. 6th ed. Philadelphia: B. Saunders. 897 p.

Journals and books published before 1920 often printed plates and figures at the end of the volume rather than include them within the article. It is appropriate then to include the figures and plate numbers that go with the article or chapter cited immediately following the page number(s).

Kingsley, JS. 1880. On a collection of Crustacea from Virginia, North Carolina, and Florida, with a revision of the genera of Crangonidae and Palaemonidae. Proc Acad Nat Sci Philadelphia 31:383-427. Pl nr 14.

Conference Proceedings:

Cohen GM, Love JE. 1993. Neuronal types in the chicken's statoacoustic ganglion. In: Bjurstedt H, editor. Proceedings of the 14th annual meeting of the IUPS commission on gravitational physiology; 1992 Sep 29-Oct 2; Berlin. A supplement to *The Physiologist* 36(1):77S-80S.

Technical Report:

Wheeler RM, Mackowiak CL, Sager JC. 1990. Proximate composition of seed and biomass from soybean plants grown at different carbon dioxide (CO₂) concentrations. NASA Technical Memorandum nr 103496. Kennedy Space Center (FL): The Bionetics Corp. 28 p.

Dissertation or Thesis:

Greene LE. 1990. Use of discrete group censusing for assessment and monitoring of reef fish assemblages [dissertation]. Melbourne (FL): Florida Institute of Technology. 69 p.

Eward KL. 1992. Regulation of iodine and amino acid uptake by iodine in lactating rat mammary epithelium [thesis]. Melbourne (FL): Florida Institute of Technology. 27 p.

Abstract:

Turingan RG, Beck JL. 2002. Predator-prey interactions in the marine plankton: functional and morphological bases of prey-capture performance in marine fish larvae [abstract]. In: Society for Integrative and Comparative Biology annual meeting and exhibition program; 2002 Jan 2-6; Anaheim. McLean (VA): SICB Business Office. p 418. Abstract nr 38.2.

(Please note that the 4 space-hanging indent is the ONLY exception to the style given in the CBE style manual. Follow all other formatting rules as it applies to the literature cited.)

In the list of literature cited, the entries are arranged alphabetically by author and then chronologically when authors of two or more entries are the same.

If you wish to list general references consulted and used as background study, then these may be listed as a subdivision to the literature cited section. Some subheading title such as "Supplemental Sources Consulted" should be added at the conclusion of the sources cited directly,

and the background materials may be listed alphabetically by author and should include the pertinent information for proper documentation.

Appendix. An appendix is optional and should be included only after consultation with your thesis advisor and careful consideration of its contribution to the thesis. Figures and tables discussed in the text cannot be placed in the appendices. Materials are included in an appendix that enhance or clarify the narrative text of the thesis. This may include, but is not limited to, technical notes, maps, photographs, computer printouts, complex charts or graphs, and long and detailed methods or survey forms. Use a separate appendix for each different type of material.

A small collection of material can be grouped together and simply titled "APPENDIX." If the amount of material is extensive, it should be classified into categories with each grouping constituting a separate appendix. When more than one appendix is used, each must be designated by a letter (Appendix A, Appendix B, etc.), as well as by a title. Each appendix should begin with a title page in the same format as the first page of a chapter or main section. When no explanatory text is required, the page will contain only the appendix designation (e.g., APPENDIX B) centered between the margins and the title, centered and begun three spaces below the appendix designation. If the title is more than one line, it is single-spaced. The sequence of page numbers in the main text is continued in the appendices.

Tables and figures in appendices are numbered consistent with the appendix designation (Figure A-1, Figure A-2 for figures in appendix A; Table B-1, Table B-2 for tables in appendix B.)

EDITING YOUR MANUSCRIPT. At the risk of overstating the obvious, if you are at all unsure of the spelling of a word, USE A DICTIONARY or a spelling checker on a computer/word processor. Also, be careful to use words correctly. An excellent source book in this regard is:

Freeman MS. 1983. A treasury for word lovers. Philadelphia: ISI Press. 333 p.

In editing your manuscript, you should check especially that your spelling is consistent (standard American) in all words that have alternative spellings; in geographical, trade, and people's names; in abbreviations; and in units. The same holds true with regard to spacing.

In proofreading your thesis, many mistakes may be caught if, after reading it front to back, you read your thesis from back to front. Too often the tendency is to read what should be there rather than what is there.

References. References require careful, albeit tedious, checking. Some aspects to check in particular are:

- The dates should agree with those given in the text.
- The spelling and order of names (when there is more than one author) should agree with those cited in the text.
- When more than one reference is cited, the order of citations should be done consistently.
- The references in the Literature Cited section should be in a consistent alphabetical style.
- The reference must include the full title and beginning and ending pages.

- Check that all references are both cited in the text and are represented in the Literature Cited section.

Figures. Figures also should be standardized. Some aspects to check in particular are:

- Similar figures should be set up in the same format, especially with regard to axis labels, capitalization, and symbols.
- Maps must have latitude and longitude indications or, if the area under consideration is small (less than a few square kilometers), they should have a north arrow and a scale.
- All symbols should be defined.
- Any accessory scales should be clear as to what they mean.

Table of Contents, Figure Legends, and Tables. Again, consistency is of key importance. Some aspects to check in particular are:

- All headings, table titles, and figure legends should correspond exactly to those indicated in the Table of Contents, List of Figures, and List of Tables (exceptions: if symbols are defined or if a scale is given in a figure legend, they need not be included in the List of Figures).
- A table or figure number cited in the text should correspond to the correct table or figure.
- All tables should have the same format as far as capitalization, both in the table titles and table bodies.
- All footnotes in tables and references in both tables and figures should be formatted consistently. For example, if one table references T. Doe as "Doe (1984)", then all tables use the same format, as opposed to "Doe, 1984" or "Source: Doe (1984)".

Acronyms and Abbreviations. All acronyms and abbreviations (except for standard units) should be defined the first time that they are used in the Abstract and then again the first time that they are used in the text.

Units. Units should be displayed in a consistent manner (only one system is used, e.g., mg/l and mm/h or mg l⁻¹ and mm h⁻¹, not mg/l and mm h⁻¹). If metric units are used, then all measurements should be metric, unless special custom dictates otherwise. This applies to all parts of the thesis--text, tables, and figures.

Statistics. Consideration of accuracy and precision in measured or calculated values is most important. Without such information, your results will have limited application. Be sure that you use the appropriate number of significant figures consistently. Likewise, you should always include the number of replicates, means, and standard deviations, if applicable.

The use of advanced statistics has enabled scientists to uncover a wide range of correlations and to test for significance. Each statistical test cited in your thesis should be fully referenced and conform to standard nomenclature and procedure.

There are many textbooks and reference books available providing discussions of error and uncertainty in the measurement of properties. An excellent source is Biometry by Sokal and Rohlf.

Numbers in Text. (From CBE Style Manual, 6th ed.) When a number designates anything that can be counted or measured, Arabic numerals should be used instead of words:

3 toads 5 enzymes 52 proteins 573 clams

Ordinal numbers are treated in the same manner:

2nd 5th 47th 643rd

If a number begins a sentence, the number should be spelled out or the sentence needs to be reworded:

"Twenty milligrams is the desired amount, but 15 mg is enough."

"The desired amount is 20 mg, but 15 mg is enough."

For numbers consisting of 2 to 4 digits, the numerals are run together:

12 234 2000 3456

For numbers with more than 4 digits, mark off groups of 3 digits, starting at the decimal point with commas. Exceptions are US postal codes, patent numbers, and telephone numbers:

1,234,567 23,456.78

For numbers smaller than 1.0, an initial 0 should always be used before the decimal point:

0.123 $P = 0.05$

SUGGESTED STYLE MANUALS. No one should assume that this handbook answers the many questions of style arising during the course of preparing a thesis or dissertation. Excellent manuals are available for this purpose. Two manuals are recommended for use in addition to this handbook:

[CBE] Council of Biology Editors, Style Manual Committee. 1994. *Scientific style and format: the CBE manual for authors, editors, and publishers*. 6th ed. Cambridge (UK): University of Cambridge. 825 p.

Miller JJ, Taylor, BJ. 1987. *The thesis writer's handbook*. West Linn (OR): Alcove. 322 p.

When inconsistencies arise between the manuals that are not resolved by this handbook, the final authority is the Department Head. See the Department Head for any questions you may have.

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In addition to technical content and quality, the advisory committee will check:

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- Consistency of style and form.
- Title page, approval page, and abstract page, including:

Style, spacing, and form (follow examples given in this guide).

Correct month (May or December) and year of graduation on all pages that require this information (title page, approval page, abstract page).

Your full legal name without designation of profession, military rank, or marriage on title, approval, and abstract pages.

- Exact correspondence of titles and page number of items in the table of contents, list of tables, and list of figures with the same titles and page numbers in the text.
- Style and spacing of major divisions and subheadings within the text, including:

An examination of each major division. Each major division is typed in capital letters and starts on a new page. Examples of major divisions are the Abstract, Acknowledgments, Table of Contents, List of Tables, List of Figures, Literature Cited, and each chapter (or section, if used in place of chapter divisions).

Consistent subordination of subheadings within each chapter or section. subheadings are the divisions within each chapter or section, do not start on new pages, and are not typed solely in capital letters.

Indication of major divisions and principal (or first-order) subheadings on the table of contents page.

- Style and placement of figures and tables within paper.
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- Correct margins.
- Numbering of every page in paper starting with abstract page ('iii').

The Department Head will check your thesis very carefully for all of the above items to see that your thesis meets a uniformly high standard of presentation. The Department Head will address not only the scientific content (which is presumed to have been handled by the committee) but also the physical appearance, editorial details, and consistent format and style.

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