

NORTHEASTERN UNIVERSITY
BOUVE COLLEGE OF HEALTH SCIENCES
GRADUATE PROGRAMS IN PHARMACEUTICAL SCIENCES

Instructions for Preparation of Master's Thesis and Doctoral Dissertation

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THE MASTER OF SCIENCE DEGREE

I. General Requirements for the Master's Thesis

- A. Please see the [Course Catalog](#) for an overview of M.S. Registration for a thesis, the composition of the Thesis Committee, general rules about the Thesis Proposal. See Department of Pharmaceutical Science Thesis Proposal Document for detailed instructions about the thesis proposal located on the PharmSci [website](#), and the graduate course catalog for thesis deadlines (link [here](#)).
- B. Distribution of Copies
 1. Copies of the approved thesis should be distributed as follows:
 - i. All committee members (minimally, four, one of whom is external, i.e., from outside the Department and/or University)
 - ii. Graduate Program Director and Graduate Program Coordinator of Pharmaceutical Sciences Department
 - iii. Bouvé Office of Graduate Student Services
 - iv. Northeastern University Library: This original copy is for the library only and cannot be used for editorial work in preparing a publication or as a printer's copy.
 1. For library rules and regulations on thesis submission click [here](#).
 - v. Student

II. Organization of the Master's Thesis

The dissertation shall contain, in the order given, the following parts, some of which are illustrated or further explained in the appendices.

- A. Title Page
 - a. This should be prepared as shown in Appendix B
- B. Abstract
 - a. A short abstract which describes why the investigation was carried out, what was done, what the results were, and what the results mean.
- C. Approval Sheets
 - a. Prepared as shown in Appendices C and D
- D. Acknowledgements
- E. Table of Contents
 - a. This table will be prepared as shown in Appendix E. It contains all division and subdivision headings.
- F. List of Tables
 - a. If tables are used in the thesis, a list of tables will be prepared as shown in Appendix F.
- G. List of Figures
 - a. If diagrams, graphs, drawings, photographs or other forms of illustration are used, they will be listed as shown in Appendix G.
- H. Introduction
 - a. Statement of the Problem

- i. This brief description acquaints the readers with the subject of the thesis and justifies the investigation.
 - b. Review of the Literature
 - i. A careful, systematic review of the literature is one of the major parts of a research report. It must be purposeful and must be so organized that it leads the reader to logical conclusions. It should not be an aimless, tiresome, chronological cataloging of tenuously related or isolated facts. The literature review should directly relate to the thesis and be focused. It should build a concise and specific context to and provide support for the thesis work, its rationale, and its significance. This is in contrast, for example, to a complete overview of published literature in the field.
- I. Materials and Methods
 - a. Keep in mind that a thesis is not restricted in length. It differs from a paper submitted to a scientific journal in this respect, since economic factors are not involved. Advantage should be taken of this opportunity for full disclosure in all sections of the thesis. *Methods should be reported completely, such that another scientist skilled in the art can duplicate the results.* Often, results cannot be confirmed by others owing to the unintentional omission of some critical piece of information. If a modification of a standard method was employed, this fact should be stated clearly, followed by a description of the modification. Be sure to identify and explain any statistical procedures used, including a literature reference. As shown in Appendix H, footnotes are used to give special information; e.g. trademarked name, catalog number, model number and name and address of manufacturer or supplier. The Materials and Methods may either be placed in their entirety in a section here and referenced as needed when referred to in the subsequent text or may be described within each results chapter. The latter is particularly appropriate if the thesis chapters are envisioned as or derived from individual manuscripts, provided that this does not result in needless repetition of the same Materials and Methods from chapter to chapter.
- J. Results
 - a. This section gives the logic and strategy of the experiments, states how the experiments address the hypotheses and goals of the investigation, explains the data shown in the tables and figures, calls attention to the most significant findings, and cites the conclusion established by the data. The tables and figures should be simple and uncluttered and reviewed for accuracy. Obvious mistakes in scientific reports include errors of computation, e.g., use of “mg” when “ng” or “g” is correct.
- K. Discussion
 - a. In this section the findings presented under “Results” are interpreted in the context of the Specific Aims guiding the investigation. Alternative explanations should be considered and discussed. The results should be discussed relative to the current literature, and the significance of the data should be assessed. Any recommendations for future work should also be included.
- L. Summary and Conclusion
 - a. A brief summary of the major findings and the significance of the investigation should be cited here. Include a clear and concise statement of how the work

advances knowledge in the field and how this new knowledge may benefit or improve medical, scientific and/or the public interests.

M. References

- a. References should be cited in the text of the thesis. Citations may be by author and date (i.e., Author and Associate, 1988) or by number (i.e., 1, 2, 3). You must cite the source of your information (references) in the text of the thesis, where the information appears. Reference formatting can follow any of the conventional styles used by scientific journals as long as it includes the full article title, all authors and the initial and final page numbers, but the style must be consistent throughout the list of references. Students are strongly encouraged to use bibliographic software (e.g. Endnote™ or Reference Manager™) in preparing their bibliographies. All citations in the text must correspond to an entry in the bibliography and vice versa. See examples below.

- i. Hollenberg MD, Cuatrecasas, P. Insulin and epidermal growth factor: Human fibroblast receptors related to DNA synthesis and amino acid uptake. *J Biol Chem* 1975; 250:3845-53.

1. (Note that numeric listings are based on the order of the references in the text)

OR

- ii. MD Hollenberg and P Cuatrecasas, (1975) Insulin and epidermal growth factor: Human fibroblast receptors related to DNA synthesis and amino acid uptake. *J Biol Chem* **250**: 3845-53.
 1. (Note that citations by author and date are listed alphabetically, and that if identical combinations of authors and dates appear in the text for different references, they must be distinguished from each other by 1988a, 1988b, etc. Up to two authors may be listed as shown above, but for three or more authors, only the first author is listed in the text citation followed by “et al.” [e.g. Cuatrecasas et al., 1988], but all authors are listed in the bibliographic listing.)
- iii. In most cases, references should be to peer-reviewed published literature, but it is acceptable to cite web pages when using downloaded figures that are not available from other sources.
- iv. Conventional abbreviations of most scientific journals can be found in “Chemical Abstracts” or online at www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=journals
 1. To use the PubMed journal function, type in the full title of your journal, press go, and find the ISO abbreviation under your journal title.

III. Physical Preparation and Format of the Master’s Thesis

A. Typing

- a. The thesis original must be printed with a laser printer using “Arial” size “11” font and must be printed on archival quality (16 weight or higher) acid-free white bond paper 8 ½”x 11”. The typing must be legible, double spaced, and on one side of the sheet only. The margin at the top and bottom must be one inch. A minimum one-and-one-quarter inch margin must be allowed on the left and right

for binding and trimming. Copies must be clear and clean. See the Library [website](#) for requirements.

B. Numbering

- a. All pages will be numbered consecutively at the top right-hand corner of each page with Arabic numerals with the first page of the introduction being considered as page 1. All subsequent pages fall into this numbering sequence including the appendices. The numerals will be placed just touching the right-hand margin two spaces above the margin. No hyphens should be used with the numerals. Numerals should not appear on the title page or any subsequent pages bearing the title of a main division, such as the introduction. Lower case Roman numerals must be used to number consecutively all pages (except the approval sheet) preceding the first page of the introduction. Here again, the title page will bear no numeral even though it is assigned the Roman numeral, I. However, the approval sheet bears no numbering, actual or implied.

C. Special Requirements for Tables and Figures

- a. Drawings, formulas, diagrams, graphs, and mathematical equations should be typed. Clear, sharp Xerox duplicates of tables and figures are acceptable. Legends for tables and figures preferably appear directly below the corresponding table or figure.

D. Source Material on Writing

- a. It is not the purpose of this pamphlet to give complete instructions on the writing of a thesis. If more guidance is needed, there are numerous excellent publications, some of which are mentioned here, that may be consulted. *Information in any of these sources shall not supersede or negate the specific directions given in this pamphlet.*
- b. *Webster's New Collegiate Dictionary*. Springfield, MA: E.C. Merriam. This book should be used for precise meanings, preferred spellings, proper hyphenation, and pronunciation. Also available online at <https://www.merriam-webster.com/>
- c. Kate L. Turabian *A Manual for Writers of Term Papers, Theses, and Dissertations (Chicago Guides to Writing, Editing, and Publishing)*. Chicago: U. of Chicago Press. 1996. This, or similar manuals, can serve as a good general source of information on organization, writing, grammar, punctuation, phraseology, and typing.
- d. Robert A. Day, Barbara Gastell *How to Write and Publish a Scientific Paper*. 6th ed. Cambridge: Cambridge University Press, 2006
- e. *A Manual of Style*. 15th ed. Chicago: U. of Chicago Press, 2006. Soon to be available online at <http://www.chicagomanualofstyle.org/index.html>
- f. William Strunk Jr., E.B. White, Roger Angell *The Elements of Style*, 4th ed., Allyn & Bacon (hardcopy), 1999 or Longman (paperback), 2000. There is also an illustrated 5th edition.

IV. Guidelines and Requirements for Thesis Work Conducted in Off-Campus Laboratories

Please see this section below under “The Doctor of Philosophy Degree” for specific instructions should the MS thesis involve work conducted in off-campus laboratories.

THE DOCTOR OF PHILOSOPHY DEGREE

V. General Requirements for the Doctoral Dissertation

- A. Please see the [Course Catalog](#) for an overview of Ph.D. Registration for a Dissertation, the composition of the Dissertation Committee, general rules about the Dissertation Proposal. See Department of Pharmaceutical Science Dissertation Proposal Document for detailed instructions about the Dissertation Proposal located on the PharmSci [website](#), and the graduate course catalog for Dissertation Deadlines (link [here](#)).
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 - v. In most cases, references should be to peer-reviewed published literature, but it is acceptable to cite web pages when using downloaded figures that are not available from other sources.
 - vi. Conventional abbreviations of most scientific journals can be found in “Chemical Abstracts” or online at www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=journals
 1. To use the PubMed journal function, type in the full title of your journal, press go, and find the ISO abbreviation under your journal title.

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- b. *Webster's New Collegiate Dictionary*. Springfield, MA: E.C. Merriam. This book should be used for precise meanings, preferred spellings, proper hyphenation, and pronunciation. Also available online at <https://www.merriam-webster.com/>
- c. Kate L. Turabian *A Manual for Writers of Term Papers, Theses, and Dissertations (Chicago Guides to Writing, Editing, and Publishing)*. Chicago: U. of Chicago Press. 1996. This, or similar manuals, can serve as a good general source of information on organization, writing, grammar, punctuation, phraseology, and typing.
- d. Robert A. Day, Barbara Gastell *How to Write and Publish a Scientific Paper*. 6th ed. Cambridge: Cambridge University Press, 2006
- e. *A Manual of Style*. 15th ed. Chicago: U. of Chicago Press, 2006. Soon to be available online at <http://www.chicagomanualofstyle.org/index.html>
- f. William Strunk Jr., E.B. White, Roger Angell *The Elements of Style*, 4th ed., Allyn & Bacon (hardcopy), 1999 or Longman (paperback), 2000. There is also an illustrated 5th edition.

VIII. Guidelines and Requirements for Thesis / Dissertation Work Conducted in Off-Campus Laboratories

- a. The M.S. thesis or Ph.D. dissertation requires independent original research by the student that makes a significant contribution to the student's field of study.
- b. Students are permitted to conduct their research in an off-campus laboratory or facility when on-campus facilities are inadequate for the project planned. This arrangement is subject to mutual agreement of the student, person in charge of the off-campus facility, the student's N.U. thesis/dissertation advisor, and the Graduate Program Director.
- c. Primary competence, project approval and supervision are the purview of the N.U. thesis/dissertation advisor.
- d. The off-campus supervisor must be on the thesis/dissertation committee and may serve as its co-chairperson.

Prior to the start of thesis/dissertation work by a student who is conducting research off-campus toward an MS or PhD degree, the Graduate Program Director requires a letter from the student and from the committee agreeing to the above conditions and including the following information:

- a. The student's name.
- b. Tentative title of thesis /dissertation project.
- c. Name and affiliation of person in charge of off-site laboratory.
- d. Location of off-site laboratory.
- e. Research support:
 - i. Off-campus facilities, equipment and supplies.
 1. Please note if these are from a grant or contract source. If so, is there a terminal date of this research support?
 - ii. Which N.U. department facilities, equipment and supplies are needed
- f. Access to facilities: When and under what circumstances may the student use the off-site facilities to work on this research?
- g. Employment status: Is the student employed by the off-campus supervisor or institution? If so, will the student be reimbursed for services rendered while working on the thesis/dissertation? To what extent will the student be engaged in thesis work during regular working hours?
- h. The student is responsible for scheduling regular meetings with the Northeastern University dissertation advisor to inform the advisor of her/his off-campus progress. These meetings should occur, minimally, once annually.
- i. The student must be listed as an author of any journal publication resulting in the thesis/dissertation work. The student's address must be listed as from the appropriate program, Graduate School of Bouvé College of Health Sciences, Northeastern University, Boston, MA.
- j. The final decision on approval or conditions for a thesis/dissertation done off-campus rests with the Graduate Program Director.

IX. Appendices: Sample Formats

A. For the M.S. Thesis or Doctoral Dissertation Proposal Sign Off Forms and Thesis/Dissertation Final Approval Forms, please consult the Bouve Current Student Resources Forms Sharepoint (link [here](#))

B. Sample Thesis Title

Title Page

THE USE OF ATTAPULGITE CLAY
AS A COMPRESSED ENTERIC TABLET COATING

Thesis Presented

by

Gustave Toutant Beaufort

to

The Bouve' Graduate School of Health Sciences
in Partial Fulfillment of the Requirements for the Degree of Master of Science/
or Doctor of Philosophy (specify which) in Pharmaceutical Sciences
with specialization in
Pharmaceutics

NORTHEASTERN UNIVERSITY
BOSTON, MASSACHUSETTS

June, 1979

E. Sample Table of Contents (Please use the Table of Contents helper in Microsoft Word)

Table of Contents

ABSTRACT	Page Number
ACKNOWLEDGEMENTS	
LIST OF TABLES	
LIST OF FIGURES	
INTRODUCTION	
i. STATEMENT OF THE PROBLEM	
ii. REVIEW OF THE LITERATURE	
MATERIALS AND METHODS	
RESULTS	
DISCUSSION	
SUMMARY AND CONCLUSIONS	
REFERENCES	
APPENDIX	

F.

List of Tables

Table (examples)

1. Disintegration Times of Different Tablet Coatings
2. Species Variations for *In Vivo* Tablet Evaluation

G.

List of Figures

Figure (examples)

1. Diagram of Different Enteric Coatings.
2. Effect of Tableting Pressure on Disintegration.
3. Photograph of a Mamesty Tablet Machine

H.

Footnotes

Consecutive full-sized numerals as superscripts¹ at the end of a citation should be used for all footnotes. For example, one might mention the generic drug Tripelenamine Hydrochloride², hence, it would be helpful to mention its trademark name and source in a footnote. Footnotes require an inch and a half underlining two spaces below the last line of text and starting at the left margin (see below). The last line of footnoting must end before the bottom margin. The sequential superscript numbers are used to precede the footnotes. Typing is single spaced. Complete sentences are not required since brevity is essential

¹Lower case letters are used to footnote tables.

²Pyribenzamine Hydrochloride, Ciba Pharmaceutical Co., Summit, NJ.