



Graduate School of Biomedical Sciences

Thesis Formatting Instructions & Graduation Requirements for Master's Students

(Please see the separate document for Doctoral Students)

<https://gsbs.tufts.edu/studentLife/currentStudents/forms>

Last Revised: **January 1, 2020**

Note: Students should not rely on former students' theses as a template – *use only the format described in the most recent version of this document*. Format requirements change and a format that was acceptable in the past may not adhere to the current requirements. It is your responsibility to ensure that the document you submit meets the requirements described in this document.

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1. Introduction

An essential requirement for the Master's or Doctoral degree from the Graduate School of Biomedical Sciences is the successful completion of a written thesis. In keeping with the high academic and educational objectives of the GSBS, the thesis should constitute a cohesive scholarly work, containing a student's original writing and research that reflects a thorough understanding of the field of study. The thesis typically includes a review of the relevant scientific literature, a record of laboratory experience, and intellectual contributions to the field.

This guide is designed to assist students in preparing a thesis that conforms to the GSBS's requirements. Students should not rely on a former student's thesis as a template for their document – use only the current version of this document as a guide. A format that was acceptable in the past may not meet the current requirements. It is the student's responsibility to ensure that the document submitted meets the requirements described in this document.

Consistency of format is essential because it visually guides readers through your document, allowing them to focus on content. **Where there are specific directives set out in this document, you do not have the option to ignore those instructions.**

This document also details specific deadlines and requirements related to completing and defending the thesis as well as graduation and the degree completion process.

2. Graduation Dates, Deadlines, Requirements, Timeline, and Process

- 2.1. *Degree Granting Dates and Commencement Ceremony:* Tufts University grants degrees to GSBS students in August, February, and May. GSBS students who are awarded degrees in August and February are invited to participate in the May commencement ceremony along with the May graduates. Additionally, students who successfully complete their thesis defense no later than 10 days before the May ceremony (two Fridays prior) may also participate in this ceremony. However, students who participate before their official graduation date are not included in the Commencement Program. The following year, they will be included in the Commencement Program but may not participate in that ceremony.
- 2.2. *Graduation Deadlines:* To be considered for a degree, a student must fulfill all University, GSBS, and Program requirements. Students must meet the requirements listed below by the deadlines listed on the GSBS website at <https://GSBS.tufts.edu/studentLife/currentStudents/graduation>.
- 2.3. *Degree Approval Process:* After completing all degree requirements, students must be approved to graduate by the GSBS Executive Council. The names of candidates are then forwarded to the Tufts University Board of Trustees for final approval.
- 2.4. *Diplomas:* Official diplomas are ordered by the GSBS Dean's Office after the Board of Trustees has approved student degrees. August and February graduates will receive their diplomas through the postal service. May diplomas are presented at commencement or mailed to graduates who do not attend the ceremony. It is crucial that students provide the GSBS Dean's Office with their current mailing addresses in order to receive their diploma.

- 2.5. *Transcripts:* Degrees and thesis titles are posted the week after degree conferral. As alumni, unofficial copies of your transcript are available to download from SIS. Official copies are also requested through that portal, even after you graduate.
- 2.6. *International Students:* International students who chose to apply for Optional Practical Training (OPT) should make an appointment with the Tufts International Center at least 90 days before the end of the semester in which they plan to graduate. Prior to applying for OPT, students must obtain a letter from the Dean's Office with three dates: 1) the defense date, 2) the date they are likely to complete all graduation requirements, and 3) the official expected date of graduation. Students may begin OPT after they have completed all degree requirements and receive their Employment Authorization Document (EAD) card.

3. MS Student Degree Timeline and Requirements:

3.1. PDD – MS Students

- 3.1.1. Attend the meeting in February with the Associate Dean to discuss the graduation process.
- 3.1.2. Complete the GSBS Student Exit Survey: https://tufts.qualtrics.com/jfe/form/SV_dnvZH782w0iIvVX. Students must enter their student IDs to ensure that only GSBS students complete the survey. However, the ID numbers will not be associated with any individual survey response.
- 3.1.3. Work with your adviser to write a draft of your thesis. Master's theses are on average 25-40 pages long, including the Bibliography.
- 3.1.4. Beginning at least 3 weeks prior to the graduation deadline upload the thesis to the *ProQuest/UMI* web site (<https://www.etdadmin.com/cgi-bin/student/etd?siteId=60>). **See Section 8 for instructions on how to complete the ProQuest/UMI upload.** The Dean's Office staff will review the thesis format to ensure it meets the requirements described in this document. Allow a minimum of 72 hours for the review process.
- 3.1.5. After receiving approval of the thesis format, email the thesis to your faculty reader and thesis adviser a minimum of one week before the graduation deadline.
- 3.1.6. Complete any thesis revisions requested by your adviser and reader and any remaining formatting requests.
- 3.1.7. Obtain the required signatures on the Thesis Defense Form and the Approval of Thesis Revisions Form and submit them to the GSBS Dean's Office by the graduation deadline.
- 3.1.8. Upload the final, revised thesis to *ProQuest/UMI* web site. Sign back into ProQuest using your original user name and password (do not start a new submission).

3.2. CTS-MS Students

- 3.2.1. Attend the meeting in February with the Associate Dean to discuss the graduation process.
- 3.2.2. Schedule a date for the CTS Advisory Committee to review your thesis.
- 3.2.3. Complete the GSBS Student Exit Survey:
https://tufts.qualtrics.com/jfe/form/SV_dnvZH782w0iIvVX. Students must enter their student IDs to ensure that only GSBS students complete the survey. However, the ID numbers will not be associated with any individual survey response
- 3.2.4. Work with your adviser to write a draft of your thesis. Master's theses are on average 25-40 pages long, including the Bibliography.
- 3.2.5. Beginning 3 weeks prior to the CTS Advisory Committee meeting: Obtain approval of the thesis format by uploading the thesis to the *ProQuest/UMI* web site (<https://www.etdadmin.com/cgi-bin/student/etd?siteId=60>) at least 7 days before the deadline to submit for the CTS Advisory Committee. **See Section 8 below for instructions on how to complete the ProQuest/UMI upload.** Dean's Office staff will review the thesis format to ensure it meets the requirements described in this document. Allow a minimum of 72 hours for the approval process.
- 3.2.6. After receiving approval of the thesis format, email the thesis to the CTS Program Office *a minimum of five days before the CTS Advisory Committee meeting.*
- 3.2.7. Following the CTS Advisory Committee meeting, the CTS Program staff will submit the Thesis Defense Form to the GSBS Dean's Office for students who successfully defend
- 3.2.8. Complete the thesis revisions requested by the CTS Advisory Committee and any remaining formatting requests.
- 3.2.9. Complete the Approval of Thesis Revisions Form and submit it to the GSBS Dean's Office by the deadline.
- 3.2.10. Upload the final, revised thesis to *ProQuest/UMI* web site. Sign back into ProQuest using your original user name and password (do not start a new submission).

4. Thesis Format Options

The format of the thesis will be, in part, dictated by the scope and complexity of the research project. The Traditional Format should be used for highly-focused research projects. The Manuscript Format may be used by candidates whose theses are composed of several related projects described in multiple manuscripts. To use the Manuscript Format, students must be first authors on the manuscript(s) and, if the manuscripts have been published, provide evidence of copyright permission. A student must choose between these two formats. A combination of the two formats is not acceptable.

All theses (traditional or manuscript format) must include at the end of each chapter a brief statement which details which figure panels and content of tables are based on the student's own experimental results and analysis. This will provide a record of the student's contributions to collaborative studies.

4.1. *Traditional Format*

- 4.1.1. Introduction: This chapter serves two major purposes: a review of the literature, and a statement of the research question under investigation. The student should provide a comprehensive background to the research project followed by the working hypotheses and introduce the thesis research. While a student's previously published review may form a substantial part of the introduction, it must be altered as necessary to encompass all data and conclusions presented in the thesis.
- 4.1.2. Methods and Materials: This chapter should provide a full description of the animals, organisms, or subjects studied as well as their numbers, materials used and their sources. Research methodologies should be referenced as appropriate, including equipment used, and any modifications or deviations from published analytical procedures fully described. To assess the quality of the data, this section should include how and when data were collected, the methodologies employed, and the reliability and validity of the procedures used. The protocols and procedures used in the research should be presented in sufficient detail to allow reproduction of the experiments. Figures and tables must be inserted into the text where they are discussed, not compiled at the end of the chapter.
- 4.1.3. Results: The Results chapter/s should contain only the original contributions of the student that represents a documentation of the research experience that is clearly written without interpretation. Each result chapter should end with a brief discussion of the significance of the findings. Tables and figures are to be numbered in order and placed within the text where referenced.
- 4.1.4. Discussion: A thesis should end with a general discussion of the studies that have been conducted and how they have answered the research question/hypothesis posed in the Introduction. It should include an overall assessment of the significance of the research, arguments for interpretations presented, and suggestions for future experimental work to address unanswered questions.

- 4.2. *Manuscript Format*: The student must be either the **sole author or the co-first author** of each manuscript that is submitted as a manuscript chapter in the thesis. This format begins with an overall Introduction chapter and ends with an overall Discussion chapter. The thesis will be presented as a unified product, rather than simply a collection of

related but separate manuscripts. Students may not change the content of their manuscripts, but they are required to change the format to meet the format requirements detailed in this document (e.g., line spacing, font, page numbering, section numbering, etc.)

4.2.1. Introduction: The Introduction serves two major purposes: a review of the literature, and a statement of the research question under investigation. The student should provide a comprehensive background to the research project followed by the working hypotheses and introduce the thesis research. While a student's previously published review may form a substantial part of the introduction, it must be altered as necessary to encompass all data and conclusions presented in the thesis. This chapter informs the reader of the structure of the thesis, including the use of manuscripts.

4.2.2. Manuscript(s): The body of the thesis must be in the form the manuscripts have been or are ready to be submitted for publication in a scholarly journal. Each manuscript will constitute a separate chapter. Only manuscripts in which the student is the sole author or the co-first author may be included. **A student must not add, delete, or edit any information included in the manuscript(s). The only change allowed to the manuscript is to re-format it to meet the format requirements in this document.** The individual manuscript abstracts and reference list should not be included in this chapter. There should be one abstract and one combined reference list for the full thesis.

Manuscript Chapter Cover Page: The names of all authors, in journal-submitted order, and the name of the journal with volume, page numbers and date (if known), and article status (i.e., "published," "accepted for publication," "submitted," or "to be submitted") must be given as a footnote to the title on the first page of each manuscript chapter. A sample chapter cover page is on page 14.

4.2.3. Discussion: The final chapter should tie together all major results. Unavoidably, this will duplicate some of the introductory and concluding material in each article. This chapter should include a general discussion of the studies that have been conducted and how they have answered the research question posed in the Introduction. It should include an overall assessment of the significance of the research, arguments for interpretations presented, and suggestions for future experimental work to address unanswered questions.

5. Copyright Information

Any materials used within the thesis that has been previously published must be properly cited and documentation of permission to use must be provided.

5.1. Copyright Release: Students who plan to publish their work prior to defending their theses should ask permission from the publishers to retain the right to use their work in their theses. If approval was not pre-arranged, students must obtain permission from the copyright owner to republish already published work in their theses.

5.2. Evidence of Copyright: There is no specific form the evidence must take, as long as it is clear that permission to re-use the content has been granted. This is usually through a

form on the journal's website and a subsequent e-mail/document granting permission. If the information used is from a journal that is Open Access, upload a copy of the Statement of Use policy containing the manuscript name and that it is open source. Evidence of copyright release and/or permission must be uploaded as a Supplemental File in ProQuest. For further information regarding copyright guidelines, go to <http://www.proquest.com/en-US/products/dissertations/copyright/>.

5.3. **How to Cite Copyrighted Information:** When using previously published tables, figures or manuscripts, the following citation format must be used so as to clarify what work belongs to the student and what was part of the original. If changes/modifications have been made, students are required to summarize any changes they make to copyrighted material.

5.3.1. If no changes were made to the original document, use this notation: "Reprinted with permission from [FULL CITATION]."

5.3.2. If changes were made to the original document, use this notation: "Adapted with permission from [FULL CITATION]. Changes include (*enter specific information* such as cropping, reversing axes, adding labels or emphasis, combining tables, or adding or removing data elements)." This is not an exhaustive list of possible changes, and students are responsible to state all alterations they made to the original document.

6. **General Formatting**

Documents should be created utilizing the page numbering, sections and table of contents features of your chosen word processor. Becoming familiar with these features and understanding how to use them effectively can save you a great deal of time in the revisions process.

6.1. *Line Spacing:* The body of the thesis, abstract, dedication and acknowledgements are to be double-spaced. The list of tables and figures, copyright materials, and abbreviations at the beginning of the thesis should be single-spaced. In addition, figure legends, long quotations, footnotes, and the Bibliography are to be single-spaced. The Table of Contents is double spaced between front matter pages and chapters, but single spaced within chapters.

6.2. *Font:* A standard font should be selected for use throughout the entire thesis. Standard fonts include Arial 11 point and Times New Roman 12 point. Eccentric type styles, such as cursive, are not permitted. Except for the Title Page, the entire document should be in the same type and size font.

6.3. *Page Numbering:* Every page in a thesis is assigned a page number. The number should be placed at the bottom center of each page, ½" from the bottom edge.

6.3.1. Lower Case Roman numerals (ii, iii, etc.) are to be used on all front matter pages. The title page should be counted when numbering successive pages however the number should not appear on that page. The first page on which a number should appear is the Abstract page (numbered ii).

- 6.3.2. Arabic numerals (1, 2, 3, etc.) begin with the first page of the Introduction and continue throughout the thesis, including tables, figures, appendices and the Bibliography.
- 6.4. *Margins*: The margins at the top, bottom and right are to be 1.0 inch; the left-hand margin is to be 1.5 inches. All tables, charts and illustrations are to fit within the established margins. If the thesis is to be printed double sided, the 1.5-inch margin needs to be on the binding side of the page.
- 6.5. *Justification*: The text should be aligned left only, not fully justified.
- 6.6. *Chapter and Section Numbering*: Chapters should be numbered consecutively. Sections and sub-sections should be numbered using two or more numbers, the first indicating the chapter number and additional numbers (separated by periods) for subsequent sections and sub-sections.
- 6.7. *Tables and Figures*: All tables and figures are numbered consecutively using a two-number format, the first indicating the chapter in which the table or figure is located and the second specifying the number within the chapter. Tables and figures must meet the following criteria:
- 6.7.1. When possible, the table/figure and its legend must fit on one page. However, the table/figure should not be reduced so as not to be readable.
- 6.7.2. Tables/figures should be imbedded in the text near where it is first referenced.
- 6.8. *Page Layout*: Chapters should start on a new page. Sections should continue within the text, but a new section header should not be the last line on a page. Do not leave blank space at the bottom of a page to allow for a table/figure to start on the next page. Move the table/figure up or down in the text to fill the space.

7. Document Organization

- 7.1. *Title Page*: The title page must follow the format in the sample on page 10, using only the font sizes and wording prescribed on the sample page. No bolding, capitalization, or changes to this formatting may be made.
- 7.2. *Abstract*: The abstract should be about 350 words. The abstract should state the main argument of the thesis so that the reader can quickly review the essential contents and results. A typical abstract includes a statement of the problem, a description of procedures and methods, the primary results, and conclusions.
- 7.3. *Dedication* (optional): Students may include a page with a brief dedication.
- 7.4. *Acknowledgments* (optional): This feature offers an opportunity to express the writer's appreciation to persons who have been especially helpful during the research process.
- 7.5. *Table of Contents (TOC)*: The TOC should list the chapters and all headings, sub and sub-sub headings in the thesis, using the same words that appear in the body of the report. The number of the page on which these items appear should also be given. The Table of Contents should be single spaced with double spacing between front piece sections and chapters. See pages 12 and 13 for examples based on the type of thesis. It

is strongly advised that automated table of contents creation process in your word processor be used, rather than building this by hand.

- 7.6. *List of Tables*: The list starts on a new page. Each table listed should include the number of the table, the title, and the page number on which it is located. The list should be single spaced, not broken out by chapter and formatted similar to the Table of Contents. For example:

| | |
|---|----|
| Table 2.1: Enter the Title of the Table Here..... | 20 |
| Table 2.2: Enter the Title of the Table Here..... | 25 |
| Table 3.1: Enter the Title of the Table Here..... | 30 |

- 7.7. *List of Figures*: The list starts on a new page and is formatted the same as the List of Tables.

- 7.8. *List of Copyrighted Materials Used*: If any part of the thesis has been published, the student must list the source document here with its full citation, in alphabetical order by author last name. This is just a list of citations; no need to include where in the thesis the work is used.

Copyrighted material includes other people's graphs or images and reusing the student's own work that has been published. The student is responsible for securing permission to use this material from the copyright holder, uploading documentation of permission and citing the source properly. In addition, include all citations in the Bibliography.

- 7.9. *List of Abbreviations*: A complete list of abbreviations used in the text must be included. The list should be single spaced and in alphabetical order.

- 7.10. *Body of the Thesis*: Students present detailed information about their research activities. See section 4 for details regarding the content of these chapters.

- 7.11. *Appendix* (optional): The appendix may include but is not limited to a more extensive presentation of materials and methods to assist other investigators who wish to utilize procedures developed by the candidate. The candidate may also wish to include as appendix material more detailed presentations of data than appropriate for a scholarly journal or thesis.

- 7.12. *Bibliography*: Complete citations for each reference used with the thesis must be listed. The citation must include the names of all authors, the title of the article, the name of the journal, the volume number and the pages of the article. The bibliography can be in alphabetical order by author last name (if in-text citations are by author last name) or by superscript number (if in-text citations are by number). The bibliography must be single spaced with hanging indents.

8. ProQuest/UMI Uploading Procedures - <https://www.etdadmin.com/cgi-bin/student/etd?siteId=60>

- 8.1. Publishing Options: There are two publishing options, traditional and open access. GSBS students should choose the *Traditional option*. This option does not cost anything and allows the public to view thesis abstracts online for free. However, it requires payment to view the entire thesis, sharing some of the revenue with the author. Because

all Tufts' theses are available as open access through the Tufts Digital Library, there is no need select the ProQuest *Open Access option*. Note that the Open Access option costs \$95 extra.

- 8.2. Delayed Release: Students may impose publishing restrictions that delay the release of their work, except for the title and abstract, to allow them to finish writing and publishing papers. Students may choose a delay of 6 months, 1 year, or 2 years from the time the thesis is released to ProQuest.
- 8.3. Retain Electronic Thesis Format: Students should convert their thesis to a PDF prior to uploaded to ProQuest, and then check the document for any errors. This will ensure that the PDF has retained the original thesis format. If there are issues, students may need to embed fonts. If you need assistance embedding fonts, click on the link provided by ProQuest/UMI.
- 8.4. Supplemental Files (optional): Any additional documents or files that are not part of the thesis itself should be uploaded as supplemental files. This would include documentation of permission to use previously published or copyrighted materials, videos, datasets or other information.
- 8.5. U.S. Copyright: Since students are the authors of their theses and, therefore, protected by Intellectual Property laws, GSBS students do not need to choose this option. If a student is involved in a patent, Tufts University will handle this process. Thus, students usually do not ask UMI to file for copyright on their behalf. Note that this service is an additional cost of \$55.
- 8.6. Bound Thesis Copies: Most GSBS students choose to order bound copies through a local vendor. While students may purchase bound copies of their theses from UMI, it is important to note that there may be a substantial delay in obtaining the bound copies because UMI only prints and binds theses after any delay in publishing selected by students. Thus, students may prefer to work with a local vendor such as Acme Bookbinders (www.acmebook.com).

9. **Sample Pages and Forms**

Sample Thesis Title Page/Official Names of GSBS Graduate Programs

Sample Table of Contents for the Traditional Thesis Format/Manuscript Thesis Format

Sample Chapter Cover Page (Manuscript Format)

Thesis Defense Form

Thesis Revision Approval Form

Sample Title Page

Please follow these formatting guidelines exactly to avoid being asked to make revisions.

- Times New Roman font
- 18-point font for thesis title
- 14-point font for all other text
- Centered
- Double-space between lines
- No bold
- Italics, subscript and superscript as appropriate in the title only

Title of Thesis

A thesis submitted by

[student's name]

in partial fulfillment of the requirements for the degree of

[Master of Science] or [PhD]

in

[name* of graduate program]

Tufts University

Graduate School of Biomedical Sciences

[Official graduation month and year: February 20__, May 20__ or August 20__]

Advisor: [First name, Last name, Degree]
(CTS students: only list your Thesis Committee Chair)

*Official Names of GSBS Graduate Programs

Doctoral Degrees:

Biochemistry

Cellular and Molecular Physiology

Cell, Molecular, and Developmental Biology

Clinical and Translational Science

Genetics

Immunology

Molecular Microbiology

Neuroscience

Pharmacology and Experimental Therapeutics

Master's Degrees:

Clinical and Translational Science

Pharmacology and Drug Development

Sample Table of Contents for the *Traditional Thesis Format*

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| 4.3.2 Sub-sub-topic | 140 |
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Sample Table of Contents for the *Manuscript Thesis Format*

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| 1.1. Sub-topic | 3 |
| 1.2. Sub-topic | 5 |
| 1.2.1 Sub-sub-topic | 8 |
| 1.2.2 Sub-sub topic | 12 |
| 1.3. Sub-topic | 25 |
| 1.4. Sub-topic | 30 |
| 1.5. Sub-topic | 35 |
| 1.6. Sub-topic | 45 |
| Chapter 2: Title of Manuscript 1 | 50 |
| 2.1. Sub-topic | 53 |
| 2.1.1 Sub-sub topic | 55 |
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| 4.3. Sub-topic | 140 |
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| Chapter 6: Bibliography | 160 |

Sample Chapter Cover Page for Manuscripts

Chapter 2: The Title of Your Chapter Belongs Here¹

Include the appropriate statement from those listed below at the bottom on the chapter page/s.

¹ Sample, AB., Test, A. Third, ZQ. 2015. *Mol Microbiol.* 11:111-121.
Reprinted here with permission of publisher.

¹ Sample, AB., Test, A. Third, ZQ. Accepted by *Mol Microbiol*
Reprinted here with permission of publisher, 11/1/2015.

¹ Sample, AB., Test, A. Third, ZQ. Submitted to *Mol Microbiol*, 1/1/2015.

¹ Sample, AB., Test, A. Third, ZQ. To be submitted to *Mol Microbiol*.



Graduate School of Biomedical Sciences

Thesis Defense Form

This form is available at <https://gsbs.tufts.edu/studentLife/currentStudents/forms>

This is to certify that the undersigned,

appointed to determine the acceptability of the thesis for _____
(CANDIDATE'S NAME)

for the degree of: Doctor of Philosophy Master of Science

in _____ on _____
(PROGRAM) (DATE)

have examined the candidate's thesis titled: _____

and found it satisfactory.

Thesis Examination Committee Member Signatures (required for PhD degrees):

Committee Chair: (Print) _____ (Signature) _____

Outside Examiner: (Print) _____ (Signature) _____

Faculty Adviser: (Print) _____ (Signature) _____

This PhD Thesis committee has determined that the amount of full-time effort needed to complete the specific thesis revisions required of this candidate is: 2 weeks 4 weeks other (please specify) _____

Faculty Adviser and Reader Signatures (required for PDD-MS degrees):

Faculty Adviser: (Print) _____ (Signature) _____

Faculty Reader: (Print) _____ (Signature) _____

CTS Advisory Committee Chair Signature (required for the CTS Master's degrees):

Committee Chair: David Kent, MD (Signature) _____



Approval of Thesis Revisions

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The thesis by _____ in _____
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has been examined for all revisions and corrections recommended by the candidate's committee and is certified as acceptable for publication.

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Diploma and Graduation Information

Candidate's name as you wish it to appear on your diploma:

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Telephone: _____ Non-Tufts email: _____

Address to send diploma _____
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Previous degrees: _____ Earned at _____
(INSTITUTION)

_____ Earned at _____
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