

**GUIDE TO THE PH.D. DEGREE AND  
THESIS MANUAL**

**2006-2007 EDITION**

**THOMAS JEFFERSON UNIVERSITY  
JEFFERSON COLLEGE OF GRADUATE STUDIES  
PHILADELPHIA, PA 19107**

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## **INTRODUCTION**

Welcome to the PhD programs of the Jefferson College of Graduate Studies! The purpose of this Guide to the Ph.D. and Thesis Manual is to serve as a set of academic procedural guidelines for doctoral students who have matriculated into a Ph.D. program in the Jefferson College of Graduate Studies at Thomas Jefferson University. Defined here are procedures for choosing a Research Advisor and Research Committee, becoming a candidate for the Ph.D. degree by successfully passing the Comprehensive Examination, and writing and defending the doctoral Thesis. Two thesis models are described in this manual, one of which must be utilized by the Ph.D. student.

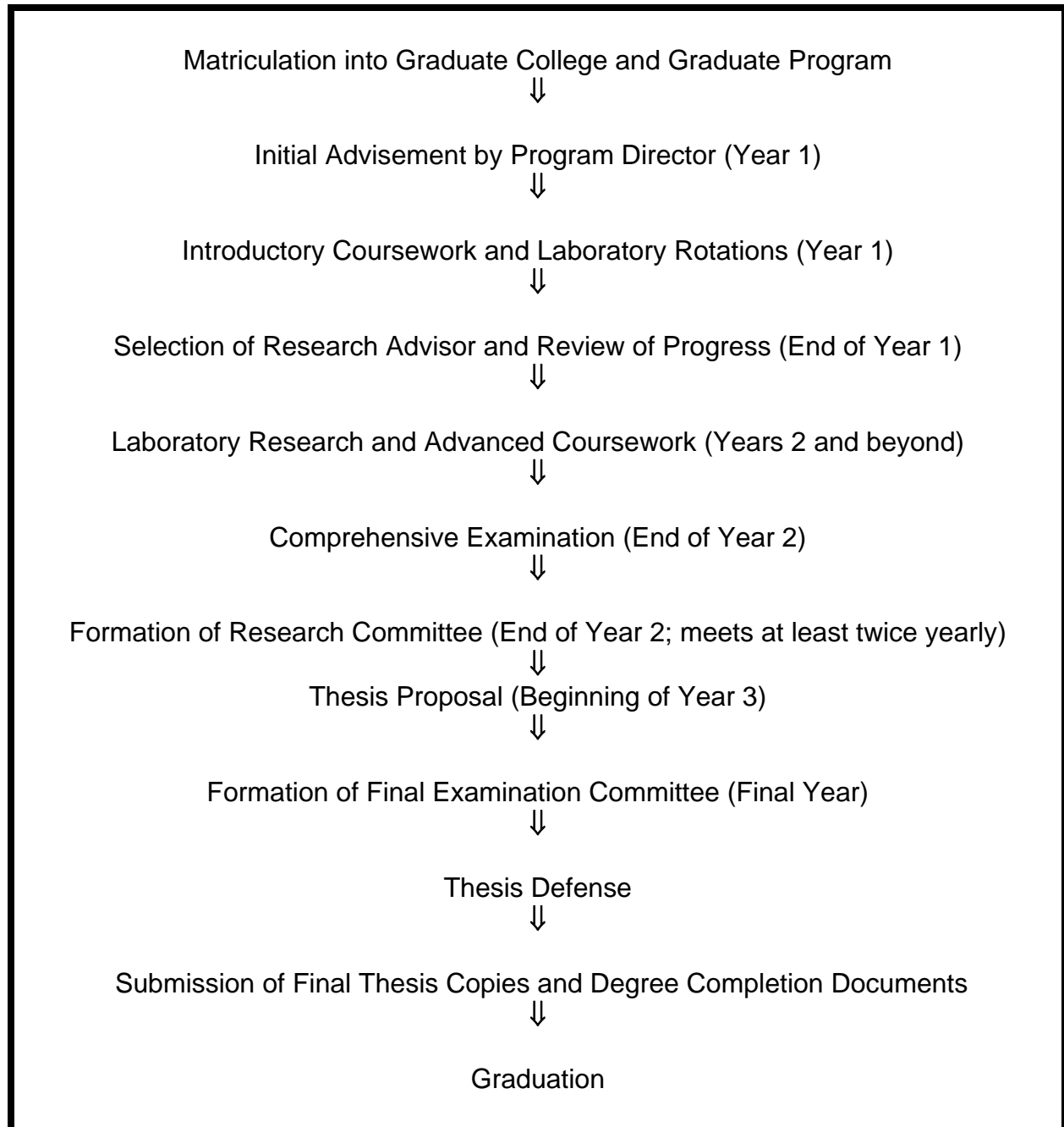
These policies and guidelines are general requirements of the Jefferson College of Graduate Studies and pertain to all Ph.D. students. The catalog and website of the Jefferson College of Graduate Studies should be consulted for further details on academic and other requirements, policies and guidelines. Individual programs may have additional specific requirements as appropriate. Students are responsible for determining and meeting program-specific requirements and should consult with their respective Graduate Program Director, program publications and web sites for advice on these requirements.

Guidelines and policies for students enrolled in a Master of Science degree program are not contained in this document but may be obtained from the Office of Masters Programs in room M-46 of Jefferson Alumni Hall or from the JCGS website.

This Manual provides a general guideline, as well as the relevant policies and procedures, for the major milestones during the course of a Ph.D. student's studies and research activities in the College. The following page contains a flowchart indicating the major events during the academic progression of a Ph.D. student.

## **FLOWCHART OF THE TYPICAL Ph.D. ACADEMIC PROGRESSION**

**The detailed format and timing of events may vary by program. Consult your specific program guidelines for further details of policies and procedures.**



## **SELECTION OF GRADUATE PROGRAM AND ROLE OF GRADUATE PROGRAM DIRECTOR**

Except for students who enter under a Joint Program option, selection of a graduate program is normally made at the time of application and acceptance to the College. Each Graduate Program has a Graduate Program Director. The Director of the Graduate Program is the person who holds overall responsibility for the quality of the training program, including its curriculum of course offerings and monitoring the progress of its students. He/she is appointed by the Dean of the College, in consultation with the Department Chairperson or other individual (e.g. Center or Institute Director) with which the program is administratively affiliated, and the Program faculty. The Program Director, or their designate, as specific to each program's guidelines, normally serves as the student's advisor for academic matters until the student selects a Research Advisor, who then assumes the principle role for academic advisement.

## **SELECTION AND ROLE OF RESEARCH ADVISOR**

By the end of the first year of study, the student and an investigator, who must be a member of the graduate faculty, shall agree that research training will take place in that professor's laboratory. This professor will become the student's Research Advisor. The Research Advisor and the student share responsibility for seeing that an appropriate breadth and depth of scholarship is achieved by the student, and that a coherent body of research has been conducted, the culmination of which is exhibited in the thesis.

In addition to intellectual resources, modern biomedical research generally requires the use of sophisticated and expensive instrumentation and supplies. Accordingly, faculty preceptors will normally be expected to have extramural, peer-reviewed funding for their research programs and available for training. This insures that the student has a training environment in which experimentation appropriate to the state of the field can be carried out, and that the mentor's research program has been found meritorious and worthy of funding by experts in the field. Exceptions, most often in the case of newly recruited investigators establishing laboratories, will be evaluated on an individual basis. Research for graduate credit is most often conducted in a basic science or clinical department of Thomas Jefferson University. However, under exceptional conditions the student may agree to do research with a graduate faculty member who is affiliated with another organized Jefferson research unit, the hospital, or an institution affiliated with Thomas Jefferson University. Research work conducted outside of Thomas Jefferson University or in affiliated institutions will be acceptable for graduate credit only by specially approved arrangement.

In special circumstances, a student may have more than one Research Advisor as warranted by the nature or location of the research project. If co-advisors are

advising the student in research, one of the advisors must be designated as “Principal Advisor” and must be a member of Graduate Faculty. The other may be designated “Co-Advisor” and does not need to be a member of Graduate Faculty or a faculty member at Thomas Jefferson University. Both research advisors must be members of the student’s Research Committee.

## **APPOINTMENT AND RESPONSIBILITIES OF THE RESEARCH COMMITTEE**

Within the first two years of the student’s matriculation, in consultation with the student and the director of the graduate program, the student’s research advisor will suggest to the Dean in writing (Appendix 1) the membership of a Research Committee whose purpose is to guide and advise the student in research. The advisor may be requested to outline the specific expertise that the proposed individuals will contribute toward the student’s scientific growth and development as well as the student’s projected research program. This committee shall consist of the research advisor and at least two other members of the Graduate faculty. A committee member other than the research advisor shall serve as the research committee chairperson. The proposed committee composition must have the necessary expertise in the area of the thesis and, simultaneously, must also be sufficiently representative of the faculty. This requirement can be met in most instances without necessarily including faculty from outside the student’s graduate program since most programs are interdisciplinary and many faculty members participate in more than one degree program. Additional members may be named who need not be members of the Graduate Faculty or may be from outside the University. The Dean will then appoint the Committee, and Committee members will be notified in writing by the Dean’s Office of their commitment (Appendix 2). Any change in the constitution of the Research Committee should be suggested in writing by the student’s research advisor and program director for approval of the Dean.

## **MONITORING OF STUDENT PROGRESS**

While the student’s Research Advisor bears primary responsibility for monitoring the student’s academic and research progress, the Program Director will also periodically monitor the student’s academic and research progress in consultation with the student and their advisor. This should be done at least once at the end of each academic year that the student is enrolled in the program and until the degree requirements have been completed. In addition, the Research Committee should meet at least twice a year during the student’s period of research activity. Records of the outcome of these Research Committee meetings are to be documented using the Ph.D. Student Research Committee Report forms available for downloading from the JCGS web site, for each committee member, at [http://www.jefferson.edu/jcgs/policies/documents/phd\\_res\\_comm\\_ind\\_fac\\_rept.pdf](http://www.jefferson.edu/jcgs/policies/documents/phd_res_comm_ind_fac_rept.pdf) as well as for the committee chairperson’s summary report [http://www.jefferson.edu/jcgs/policies/documents/phd\\_res\\_comm\\_chair\\_summary\\_rept.pdf](http://www.jefferson.edu/jcgs/policies/documents/phd_res_comm_chair_summary_rept.pdf). The dates of occurrence of these meetings are also to be documented by the

student in the Semi-Annual Student Progress Report which is due in the JCGS Dean's Office by February 1 and July 1 of each academic year or as otherwise indicated on the forms. Copies of the detailed reports of these meetings and analysis of the student's progress should be retained by the Research Advisor, student, and Program Director.

Up to date information contained in the Semi-Annual Student Progress Report is essential in assuring that a student maintains satisfactory academic performance upon which doctoral fellowships are awarded. Failure by the student to submit this information prevents a proper evaluation of academic progress. Consequently the fellowship award consisting of stipend payments and tuition support may be discontinued.

The product of a student's doctoral work is expected to be a substantial contribution of new knowledge in the field of inquiry. Accordingly, the thesis must demonstrate a high degree of professional competence and intellectual inquiry. It is the responsibility of the Research Advisor and the Research Committee to guide the Ph.D. candidate throughout the process of research and the documenting of this investigative effort, the culmination of which is the writing of the thesis by the candidate.

## **THE THESIS PROPOSAL**

The term '*thesis*' derives from the Greek, meaning "a proposition". At the culmination of the student's doctoral work, s/he will present and defend the "proposition" that reflects the new information obtained as a product of his/her work. Underlying this work are one or more '*hypotheses*', again literally the "base or bases of an argument or proposition". The student is encouraged to think about their research problem in this context of the challenge of a hypothesis or question (or series thereof) that are unknown and need to be answered, and of experimental approaches that will be undertaken with the expectation of answering the questions. This new information will then provide the basis for the student's proposition, or *thesis*.

To assist in the process of learning to identify important questions that need to be answered, forming useful hypotheses, designing experimental approaches, and to analyze and present experimental results, early in the course of research and with the guidance of the Advisor and Research Committee, the student will prepare a Thesis Proposal for committee review and approval. While the detailed format may be determined by individual program guidelines, this is usually in the format of a mini-NIH grant that serves as a prospective guide for the student's research program. Depending on the Graduate Program, review of the Thesis Proposal may be a component of the Comprehensive Examination, or may be reviewed separately. Typically the Thesis Proposal should be submitted to the Research Committee for approval by the end of the second year of graduate study, and no later than the end of the third year, to ensure that the student's research program is formulated and monitored in a timely fashion.

## **THE COMPREHENSIVE EXAMINATION AND APPOINTMENT OF THE COMPREHENSIVE EXAMINATION COMMITTEE**

A student in good academic standing becomes a candidate for the degree of Doctor of Philosophy after passing the Comprehensive Examination, which may consist of a written and/or oral part(s), as determined by the student's Comprehensive Examination Committee and specific Graduate Program requirements. The examination may be taken only after successful completion of all required course work determined by the guidelines of the program in which the student seeks the degree. It is desirable for the examination to be held by the end of the second year of study, but in any case no later than the end of the third year of study. If a student has already passed the Comprehensive Examination in one Ph.D. program and is transferring into another program, the receiving program may require the student to take a second Comprehensive Examination in the program into which he/she has transferred in order to ensure that the student has sufficient knowledge of the new field of study.

The requirements and objectives of the Comprehensive Examination are determined primarily by the student's graduate program. However, the format of the examination should be such that it includes assessment of the following:

- the student's comprehensive knowledge of their chosen field of study
- an appropriate ability to synthesize and apply basic principles of biological structure and function
- the student's ability to use his/her scientific knowledge in the approach to, and design of, research problems as well as interpretation of data, in areas not necessarily dealing with the student's specific research project

The Comprehensive Examination Committee must be appointed prior to the examination. The Director of the student's Graduate Program must recommend in writing (Appendix 3) to the Dean the members who are to serve on the Comprehensive Examination Committee, and the date, time, and location for the Examination.

Comprehensive Examination Committee members may be from other Graduate Programs or from other institutions, but a minimum of three must be members of the Graduate Faculty of the College. The proposed committee composition must have the necessary expertise in the area of the degree program and, simultaneously, must also be sufficiently representative of the faculty. This requirement can be met in most instances without including faculty from outside the student's graduate program since most programs are interdepartmental and many faculty members participate in more than one degree program. A member of the student's graduate program other than the thesis advisor is named as Chairperson of the examination panel, with the detailed nature of the committee and the exam depending upon the policies of the student's Graduate Program.

The Dean shall appoint the Comprehensive Examination Committee, and the members are subsequently notified in writing by the Dean's Office of their appointment and the details of the upcoming Examination (Appendix 4). At the conclusion of the Exam, the Comprehensive Examination Committee members shall determine whether the student has (1) passed the exam without condition, (2) received a conditional pass or a deferral, in which case the committee shall specify the requirements to be met to complete the exam, or (3) failed the exam. When a student has successfully passed the exam, the committee shall sign a document, originating from the Dean's Office, stating that the student is competent to continue pursuit of the doctoral degree. This document will reside in the student's file in the Dean's Office (Appendix 5). The student becomes a candidate for the Ph.D. degree upon successful completion of the Comprehensive Examination. Failure of a student to ultimately successfully pass the examination shall result in their termination from the Ph.D. program. If sufficient work has been accomplished, a Terminal M.S. degree may be offered to students who fail to pass the examination upon recommendation of their research advisor and committee.

### **APPROVAL OF READINESS TO WRITE THE THESIS**

Before the student begins writing the thesis, the research advisor and the research committee must come to consensus with the candidate as to the content of the thesis. This agreement is to be put in writing by the research advisor, research committee and program director using the Ph.D. Student Research Committee Report forms available for downloading from the JCGS web site, for each committee member, at

[http://www.jefferson.edu/jcgs/policies/documents/phd\\_res\\_comm\\_ind\\_fac\\_rept.pdf](http://www.jefferson.edu/jcgs/policies/documents/phd_res_comm_ind_fac_rept.pdf)

as well as for the committee chairperson's summary report

[http://www.jefferson.edu/jcgs/policies/documents/phd\\_res\\_comm\\_chair\\_summary\\_rept.pdf](http://www.jefferson.edu/jcgs/policies/documents/phd_res_comm_chair_summary_rept.pdf), submitted to the Office of the Dean, with copies maintained by the student,

advisor and program director. Information contained in the form defines the following:

- The readiness of the candidate to begin writing the thesis
- Which model of the thesis the student is to use
- If the student is to use Model II (the manuscript format), how many and which manuscripts the student is to use, and
- A brief declaration of the student's substantive contribution to each paper to be included (i.e. primary author, or which experiments, analysis, writing contributions, etc. the student made if not primary author)

Following the Program Director's written approval of this proposal, the Ph.D. candidate may begin the writing of the thesis.

A reminder to the student regarding submission of the above letter is included in the Semi-Annual Ph.D. Student Progress Report.

## **APPOINTMENT OF FINAL EXAMINATION COMMITTEE AND DEFENSE OF THE THESIS**

All Ph.D. candidates must present an open seminar on their thesis work and successfully defend their Thesis in a subsequent private meeting with the examining committee prior to graduation. It is the student's responsibility to schedule these two events with the Dean's Office and the committee *at least one month before the planned* Defense. The Program Director shall serve as an ex officio voting member of the Final Examination Committee, and the Dean or the Dean's designate will also serve as an ex officio non-voting member. If the student wishes to graduate in the upcoming June Commencement of the College, the Thesis Defense must be passed and the final approved copy of the thesis must be turned in to the Dean's office no later than April 30 of that year. Since it is the usual case that revisions, sometimes extensive ones, are required to be made to the written thesis as a condition of completion of the degree requirements, students should ensure that their thesis defense date occurs sufficiently prior to April 30 to permit time for the expected revisions to the thesis.

By the time of the thesis defense, the research work performed by the student should generally have reached a stage of completion such that at least one paper, representing work to which the student has been a primary contributor (though not necessarily sole first author), has been published or accepted for publication in a peer-reviewed journal.

At least one month prior to the planned Defense, the Ph.D. candidate requests from the Program Director of his/her graduate program a letter (Appendix 6) offering the following information:

- the date, times, and locations of the candidate's Thesis Defense and Public Seminar; the Dean's office may assist in scheduling these events if desired
- the title of the thesis,
- the members of the Final Examination Committee,
- the date on which the student's stipend payment will be terminated. (This information is for JCGS Financial Office use only; it will not be printed on further defense-related documents.)

The Examining Committee shall be chaired by the Program Director (or his/her designate) and shall be composed of members of the Research Committee; it may also include additional members selected by the Dean. The proposed committee composition must have the necessary expertise in the area of the thesis and, simultaneously, must also be sufficiently representative of the faculty. This requirement can be met in most instances without including faculty from outside the

student's graduate program since most programs are interdisciplinary and many faculty members participate in more than one degree program. As noted above, The Dean or the Dean's designate shall also be an ex-officio non-voting member of all Final Examination Committees.

The Dean shall appoint the committee, and members will receive written notification (Appendix 7) from the Dean's Office of the constitution of this committee and approved dates of the Public Seminar and Thesis Defense. Copies of this letter are sent to the JCGS Finance Office, Office of Financial Aid, Office of the Registrar, and the Office of International Exchange Services.

At least three weeks before the Thesis Defense, the Ph.D. candidate should deliver one copy of the thesis draft to the Dean's Office, one copy to the student's Program Director, and one copy to each of the Final Examination Committee members. Photographs, graphs, illustrations, and tables need not be originals but must be adequate to allow effective evaluation by Examination Committee members. Corrections and changes specified at the Defense are to be made in the final thesis copies.

The Public Seminar consists of a presentation on the Thesis by the candidate that may be attended by anyone interested. The student's Graduate Program and department usually post announcements of this seminar to the Jefferson community.

In the oral defense, the candidate must demonstrate competence in his/her specific area of research as well as successfully defend both the conceptual aspects of the dissertation research (the 'Defense'), and the thesis document itself. Immediately following the closed meeting the Examination Committee will vote on the Defense, and the student will be deemed to have passed if sufficient mastery of the thesis subject has been demonstrated and no more than minor corrections to the written thesis are required. The Committee may accept the thesis document as presented, require only minor modifications that can be completed within 10 days, or require substantive revisions that are expected to necessitate more time. Thus, as previously stated, students should ensure that their thesis defense date occurs sufficiently prior to April 30 to permit time for the expected revisions to the thesis to be completed, in order to attend the June commencement.

In the first two cases, the candidate will be judged to have successfully passed the thesis defense. The Dean will then be presented with a written statement, the Thesis Defense Signature Form, signed by each member of the Final Examination Committee, declaring that the candidate has successfully completed all requirements for the degree of Doctor of Philosophy (Appendix 8). This Thesis Defense Signature Form document is prepared by the Office of the Dean and will be provided to the committee on the day of the defense. This document will become part of the student's file in the Dean's Office. In the event that substantive revisions to the thesis document are indicated, one or more members of the committee may choose to

withhold their signatures from the Thesis Defense Signature Form, with these individuals assuming responsibility to ensure that appropriate text corrections have been completed. In either case, the candidate will only have been deemed to have successfully completed all requirements for the degree of Doctor of Philosophy when all corrections are made and the completed Thesis Defense Signature Form has been provided to the Office of the Dean.

## **SUBMISSION OF FINAL THESIS COPIES AND ADDITIONAL REQUIRED DOCUMENTS AFTER THE DEFENSE**

To complete the Ph.D. degree requirements, students must submit to the Dean's office the final corrected copy of the thesis and additional documentation as indicated in the Ph.D. Degree Completion Checklist, which is available from the JCGS website and in appendix 9 of this manual. These items include the final corrected thesis, the thesis signature pages, the UMI Thesis Submission Form, the Survey of Earned Doctorates, the JCGS Exit Survey, and the Application for Degree form (if not previously submitted to the Registrar). Furthermore, any additional requirements such as may be set by the Office of the Dean, the Office of the Registrar, or the Office of Financial Aid, must also be completed.

The final thesis must conform to the guidelines specified in this Guide and should incorporate all necessary changes and corrections stipulated by the Final Examination Committee. **One unbound original thesis** and **two bound original theses** must be submitted to the JCGS Office of the Dean by **April 30** in order to receive the diploma. The diploma will not be released to the Ph.D. student until both the unbound and two bound thesis copies are submitted to the JCGS Office of the Dean. Although the diploma will not be released until all of these requirements are met, students may walk in the June commencement if the candidate has passed the thesis defense, has submitted the unbound copy of the corrected final thesis, accompanied by signed copies of the required thesis signature pages, and has submitted the other Ph.D. completion documents indicated above. However, the diploma will not be issued until the two bound thesis copies have been submitted to the Dean's office as well.

**One unbound original** of the thesis must be submitted to the Dean's Office for approval by the Dean of the College of Graduate Studies. The unbound copy must be accompanied by at least **three original signature pages**. These signature pages must be first signed by the Research Advisor, the Program Director, and the Department Chairperson of research advisor's academic home department where the research was carried out, before submission for the Dean's signature. No reproduced signature pages may be used in the two bound thesis copies to be submitted to the Dean's office. Upon the Dean's signing of the pages, the Dean keeps one original signature page to be inserted in the unbound thesis. The other two (or more) are returned to the student to be inserted in the copies to be bound.

The Dean's Office sends the unbound thesis and a UMI agreement form completed by the student to University Microfilms, Incorporated (UMI) to be microfilmed, copies of which may be made available for reproduction. The thesis is then considered "published" in its entirety and is available for proper public "fair use" and/or requests for permission for use. Following microfilming, UMI returns the unbound copy to the JCGS Dean's Office, which returns it to the student. (UMI forms within the explanatory booklets are available in the JCGS Dean's Office and are also sent with Commencement materials and information to all potential graduates.)

The Dean submits the two bound copies to the Scott Memorial Library; one copy for its permanent collection, and one copy available for circulation.

It is the student's responsibility to arrange with a commercial bindery for the binding of and payment for all copies of the thesis, including the two copies for the Graduate College. One additional bound copy is customarily given to the Research Advisor. Other bound copies may be presented at the student's discretion to Research Committee members, friends, and family. A list of binderies used in past years by JCGS students appears as Appendix 10. Names of other local binderies are listed in area telephone directories.

Black covers must be used for copies submitted to the JCGS Dean's Office; cover colors for copies given out at the student's discretion are the decision of the student. On the cover of the bound thesis should appear: the title of the thesis, name of the student, most recent degree prior to the completion of the Ph.D., and the year of the successful Ph.D. thesis defense. On the spine of the bound thesis should appear the name of the student, most recent degree prior to the completion of the Ph.D., and the year of the successful Ph.D. thesis defense.

By putting the thesis in tangible form, that thesis is automatically copyrighted. It is the student's option to file for Registration of the copyright, in which case the copyright becomes public record and is prerequisite for filing infringement litigation over your copyright. Registration of the thesis copyright can be done at the time of submission of the UMI Thesis Submission Form. Registration is the student's financial responsibility. For information on copyrighting, refer to that section in this Manual or contact the Dean's Office.

## **FORMAT OF THE THESIS: MODEL I, TRADITIONAL FORMAT**

### **General Information**

Name of the Candidate. The name of the candidate should be the name under which the student is registered at Thomas Jefferson University. Thereafter, the use of this name should be consistent.

Title of the Thesis. The title must be consistent in every respect on the cover and all necessary forms (check spelling, capitalization, punctuation, hyphenation, and underlining).

Use of copyrighted material (For further information, see Appendix 11). Publication of a dissertation by any method, including through University Microfilms Incorporated, subjects the author to the provisions of the copyright law with regard to quoting copyrighted material. In all cases it is essential that reproduction of copyrighted illustrations, tables, charts, etc., be authorized by copyright owner. Samples of letters requesting permission and of replies granting permission comprise Appendix 12. Please be aware of this specific information as stated in the University Microfilms Incorporated booklet "Publishing Your Dissertation;"

Using materials copyrighted by others. As the author of the dissertation manuscript, you will be asked to certify that any previously copyrighted material used in your work, beyond "fair use," is with the written permission of the copyright owner and that UMI will not be held responsible for any damages that may arise from copyright violations. (See the Chicago Manual of Style for an explanation of "fair use.")

By signing the Agreement Form in the back of (the UMI) booklet, you agree to the above terms. In addition, copies of permission letters from copyright owners must be attached to the Agreement Form. These permission letters must state that the copyright owner is aware that University Microfilms, Incorporated may supply single copies on demand. **If permissions are not supplied, copyrighted materials may not be filmed ("Publishing Your Dissertation", University Microfilms, Incorporated, Ann Arbor, Michigan).**

Copyrighting of the thesis (For further information, see Appendix 11). The student automatically copyrights his or her thesis by putting the document in tangible form. The copyright page after the signature page is optional. However, it is a good idea to include it since it serves to maintain your copyright on all subsequently distributed copies by alerting others that you are the holder of the copyright and are aware of your legal rights. For more complete copyright protection, the student may *register the copyright*. This registration becomes public record and is a prerequisite for filming infringement litigation over your copyright. You may either write directly to the Copyright Office, Library of Congress, Washington, DC. 20559 for the necessary forms or may utilize the services of University Microfilms, Incorporated. UMI forms are available in the Registrar's Office. Payment for registering of the copyright through the Library of Congress or through UMI is the responsibility of the student. A booklet with information on copyright law, student legal rights and responsibilities for "fair use" of source material is available for reference in the Dean's Office, M-63 Jefferson Alumni Hall.

Paper. The candidate is responsible for printing on good letter quality 8 ½" x 11" paper, suitable for quality printers. Fine quality letter stock (cotton fiber; watermark) may be purchased in local stationary stores, but much of it is expensive. It may be

used according to the student's preference. Whatever the paper, make certain that it will feed properly through the type of laser printer you will be using.

Printers. The quality of print must be superior. Any graph and figure reproductions within the thesis must be of superior quality. Printers affording the best quality and highest resolution of letters are laser printers and ink-jet printers.

## Mechanics

### *Style*

As a basic guide for style, use of numerals, symbols, and abbreviations and for the general setup of tables and text figures, the candidate is advised to refer to a standard style manual or professional journal in his/her field and use the style consistently throughout. Two manuals available in the Dean's Office for student reference are: MLA Handbook for Writers of Research Papers by Gibaldi and Achtert, and A Manual for Writers by Turabian. Another examples of this type of manual is The Elements of Style, 3<sup>rd</sup> edition by W. Strunk, Jr. and E.B. White, McMillan, 1979. Other style manuals are available in Scott Memorial Library.

### *Quotations*

The use of quotations is discouraged; however, if used, they should be as single spaced, set-off passages not enclosed within quotation marks. Quotations within a set-off passage should be within quote marks. Square brackets should be used to indicate candidate's additions. Source reference should appear outside any quotation marks and preferably at the end of the quotation rather than after the author's name.

### *Bottom-of-page Footnotes*

Use of footnotes is discouraged. However, if used they should be brief and numbered consecutively (by page is acceptable if usage is consistent throughout). Be sure there is a corresponding text reference number for each footnote. All footnotes should begin on the page which carries the reference number in the text and should not encroach the margin. Footnotes should begin three spaces below the last line of text, separated from it by a line.

### *Plural Words*

Words such as "phenomena" and "criteria" should be treated as plurals and, like "data," should have plural verbs and qualifiers.

### *Abbreviations of Measurement*

Except at the beginning of a sentence, Arabic numerals should always be used with abbreviations of measurements, decimals, and percentages. The word "percent" should be spelled out except in tables or in parenthetical use, or when standard professional journal usage specifies the % symbol. If periods follow abbreviations of measurement, usage should be consistent, including that in tables and figures.

### *Hyphenated Words*

All compounds should be treated consistently throughout manuscript (including tables and figures). Adverbs ending in ly should not be followed by a hyphen. Such prefixes as “semi,” “non,” “post,” “pre,” etc., should be treated consistently throughout.

### *Symbols*

Symbols used within the text should be of the same size as the print or font. If the font used does not include symbols, they should be hand-drawn in permanent ink.

## **Copy Sequence for Components of Thesis**

### **TITLE PAGE**

When filed with University Microfilms International, the thesis will be a valuable source for other scholars. Your title will be the basis for the retrieval systems and it is essential that the title be a meaningful description of its content. Avoid jargon, oblique references, symbols or formulas. The degree following your name should be the highest degree previously attained. (See Appendix 13).

### **SIGNATURE PAGE**

The signatures of the Department Chairperson, Research Advisor, Program Director, and Dean of the College of Graduate Studies are to appear on the signature page. All signatures on the pages submitted to the Graduate College must be originals. Other thesis copies may have reproduced signature pages at the student's discretion. (See Appendix 14)

### **COPYRIGHT PAGE**

The copyright page after the signature page is optional. However, it is a good idea to include it since it serves to maintain your copyright on all subsequently distributed copies by alerting others that you are the holder of the copyright and are aware of your legal rights. (See Appendix 15)

### **ABSTRACT**

For the Master's thesis the abstract is limited to 150 words. For a Doctoral thesis the abstract should not exceed 350 words. The abstract should describe briefly a) the focus of research, b) methods of data collection, c) summary of findings, and d) conclusion.

### **DEDICATION**

If any, it should not be listed in Table of Contents. (See Appendix 16)

### **ACKNOWLEDGEMENTS**

This page expresses appreciation for all those who assisted the student and mentions may permission obtained to quote copyrighted material and any special funding or grants. (See Appendix 17)

## PREFACE

The preface is an optional brief statement regarding the nature of the investigation.

## TABLE OF CONTENTS

All subheadings listed should carry corresponding text page numbers.

## LIST OF FIGURES and LIST OF TABLES

These lists should include the full titles of all figures and tables, including those found in the Appendices, as they appear on each figure and table. They should appear with page numbers. (See Appendix 18)

## LIST OF SYMBOLS AND ABBREVIATIONS

This list need not include commonly accepted abbreviations such as units of time, mass, etc. but should include complete chemical names of compounds for which abbreviations are used. (See Appendix 19)

## MAIN TEXT

INTRODUCTION (review of literature, statement of problem)

MATERIALS AND METHODS

RESULTS

DISCUSSION

### Headings

All chapter, section, subheadings, and table headings of more than one line should be single spaced. Subheadings are not numbered or lettered unless this style is generally used when the manuscript contains multiple headings.

### Divisions

Common divisions of text are chapters, sections, or parts. Subheadings within these min headings should be reflected consistently in the Table of Contents. Each chapter should begin on a new page and should be numbered consecutively. The Introduction may be the first chapter or may precede that chapter. A sample (Appendix 20) follows at the end of the Manual:

CHAPTER OR SECTION HEADING

(Centered and capped)

Major Subdivision

(Centered and underlined, with principal words capped; an extra space precedes a major subdivision)

Second Level Subdivision

(Flush left and underlined, with principal words capped; the format should remain consistent throughout the text. These subdivisions do not begin a new page; an extra space precedes a second level subdivision.)

### Third level Subdivision

(Flush left and underlined; with the exception of proper nouns, only first word is capped. No extra space precedes this level.)

### Paragraph heading (Text follows on same line.)

(Heading indented, underlined, and followed by a period; unless proper nouns occur, only the first word is capped.)

## APPENDIX

An appendix contains any material inappropriate to the body of the thesis: large table and graphs, very long quotations, original documents, and other supplementary evidence or “raw material”. It should follow the bibliography. No mimeographed material should be included; all copy should be printed in the same form as the main text.

The appendix may be preceded by a title page bearing the word Appendix (“Appendices,” if more than one). Such a page is counted but carries no typed page number.

If there is more than one form of material, each section should be given a number or letter (capitalized) and a title. Each appendix should be itemized in the Table of Contents.

## BIBLIOGRAPHY OR LIST OF TEXT REFERENCES

Every item cited in the text must appear in the bibliography. (See Appendix 20) All references must appear with the proper permissions granted. For information on “fair use” of course material, a booklet published by UMI is available in the Dean’s office, M-63 JAH, for reference.

The citation appears in parentheses or brackets within the text body. References keyed to the cited literature may be by author’s name and date of publication, as in (Jones, 1989) or numerically in order of citation, as in Smith (68), where the name of the author must appear beside the number. In the case where authors’ names are used, papers with two authors require both names in the text. The use of et al. is restricted to citations with three or more authors. In circumstances where more than one paper with the same author, published in the same year, are cited, the separate citations should include lower case letters to permit their distinction in the text as well

as in the bibliography (1976 a, 1976 b, etc.). Moreover, the bibliography must be listed in alphabetical order based on the first letter of the last name of the first author.

Regardless of the form utilized for citation of the literature, the bibliography must include the names of all authors with initials and the complete title of the paper with only the first letter of the first word capitalized. The style for journal abbreviation is that used in current editions of the Index Manual published by the National Library of Medicine.

Journal articles should be listed as follows:

Fraiser, I.S., J.R.G. Challis, and G.D. Thorburn, 1976. Metabolic clearance rate and production of oestradiol in conscious rabbits. *J. Endocrinol.* 68:313-318.

No reference should be made to articles submitted, but not yet accepted for publication. If a manuscript has been accepted by a journal, it may be cited. In this case, the words (in press) should be placed in the position occupied by year of publication and the citation will end following the journal name.

References to chapters in books should be listed as follows:

Henderson, J.R., 1979. Regulation of adenosine Metabolism in: Physiological and Regulatory Functions of Adenosine and Adenine Nucleotides. Baer, H.P. and G.I. Drummond, (eds.). Raven Press, New York, pp. 305-317.

References to books should be listed as follows:

Turner, C.D., 1960. General Endocrinology, Ed. 3. W.B. Saunders Co., Philadelphia, pp. 423-427.

## **Figures and Tables**

As with text, all figures and tables should appear on the right-hand page with the number and legend typed parallel to the copy. They should follow the page which refers to the specific table and should be referred to specifically by its number. No page should end at the mention of a figure or table; text should continue to the bottom of the page. A figure or table may be placed within text if no longer than half a

page in length; it must follow the text reference to it and should be separated from above text by an extra space. If all figures or tables appear in the Appendix, a statement to this effect must be printed next to the first mention of a table or figure and is not mentioned again. If some appear either within the text or in the Appendix, their locations must be clearly identified when the figure or table is mentioned in the text. Either the figure or table follows in the main text or appears as (Table 5, Appendix B).

### Figures

Charts, graphs, photographs, etc. should be designated as figures and should be numbered consecutively throughout the thesis with Arabic numbers. The title and number of a figure appears at the bottom of the figure unless the illustration occupies the total page area. In this case the identification may be placed on the facing left-hand page (which is counted, but carries no typed page number). The page number is typed in the standard position. Ordinarily, figures should be placed as near as possible to their text reference. (See above) In the List of Figures, the number of the page on which the figure (not the legend) appears should be indicated.

### Tables

All tables should be numbered consecutively with Arabic numerals throughout the text and appendices. The Table number and title, single spaced, should appear at the top of the table. Information in tables and attached notes should augment, not duplicate, the text and must be intelligible without reference to the text.

Table sources and notes should be placed directly under the table, not at the bottom of the text page. Table footnotes should be designated by letters or symbols in superior position and should appear at the foot of the table.

If a table is too long for one page, it may be continued on the next, with the caption on the first page only; subsequent pages carry the table number followed by the word “continued” or “extended.” Column headings must be identical on any continued page. A long narrow table may be divided in half, with one half on the left side and one half on the right side of the same page, with a double vertical line separating the two halves. Column headings must be present on both halves.

If a table is taken from another source, the word “source(s)” must be stated, followed by complete citation of reference. All sources must appear in the Bibliography.

### Over-sized Material

Figures and tables may be turned 90° to read horizontally; all margins shall remain consistent with the rest of the thesis text. Detached material, or material too large to

be folded into a regulation thesis-size binder is not acceptable. Material larger than page size should be folded, or photographically or xerographically reduced. Vertical and horizontal folds should be a minimum of 1 inch from the right or bottom margin, respectively. Pages with horizontal folds should be cut out at binding margin from the bottom of the page to the fold.

### Commercial Material

The use of commercial graph paper, printed or mimeographed material, etc., is not acceptable in its original form. In reproducing such material for the thesis, all printed identification matter must be deleted, margins must conform to thesis specifications, and correct paper stock employed.

### Color

Use of colored pencils is not acceptable. Although certain permanent inks are satisfactory for initial work, they reproduce as varying shades of gray. Use of dots, dashes, lines, and combinations thereof, rather than colored ink, is advised.

### Lettering

Figures other than photographs should be graphically drawn by computer or with permanent ink, if drawn by hand. Type face or lettering within the figure may be any font. Titles and page numbers must be in the same font as the rest of the thesis text.

### Mounting of Photographs

All photographs must be original. Other than full-page reproductions, they should be mounted with either *dry mounting sheets* or *photo mount spray*, both of which may be purchased locally in camera shops. Be careful to cut and mount pictures evenly and neatly. Before stacking pages of thesis, make sure mounting adhesive is dry to prevent seepage and smudging. Rubber cement, mucilage, picture corners, paper clips, staples, or adhesive tapes are not acceptable.

## **Formatting**

### Type Face or Font

Any standard is allowed as long as it is extremely legible and consistent throughout the paper. The pitch should preferably be 12-point, but no smaller than 10 point. The pitch should be the one for which the font was designed. Italics, bolding, and use of symbols are acceptable. The quality of type for all printed copies must exhibit

smoothness of all letters, images of solid contrast, standard upper and lower case letters, and presence of descenders (parts of letters extending below the line, as in p, g, q).

### Spacing

Double spacing must be used throughout, except for the table of contents, lists of tables and figures, the bibliography, and quotations all of which are single spaced.

### Pagination

All printed material should be on the right hand page. Pages preceding the first text page should carry small Roman numerals centered in the bottom margins. The numbering begins with *ii*; the title page counts as page *i*, but the number does not appear. Text pages should carry Arabic numerals in center upper or lower margin. Left-hand legend and half-title pages are counted but carry no typed page numbers. Facing table pages should carry a left hand page number. Fold-in pages should carry a page number in the upper right-hand corner on typed side. The last fold-back should show a portion of text area and the page number. Each page number should be checked to avoid missing, duplicate, or transposed pages. Page numbers with letter designation (i.e., 114a) are not acceptable.

### Margins

Binding edge (left-hand) should be a minimum of 1½ inches. Top, right-hand, and bottom margins should be a minimum of 1 inch. For the right-hand margin, either a right-justified or “ragged-edge” margin is acceptable. A 2 inch margin should be used at the top of each new chapter or section page. To avoid carrying a partial last line of a paragraph to the following page, this material may be printed in the bottom margin. Other than this, the page number is the only material allowed in the margins. Top-of-page numbers should ride on the fourth line down, and bottom-of-page numbers on the fourth line up. In cases where tables or illustrative material will not conform to the above margin specifications, a minimum of 1” on all four sides is acceptable.

## **FORMAT OF THE THESIS: MODEL II, MANUSCRIPT FORMAT**

### **Background**

Approved as a new format for only the doctoral thesis by Graduate Council on March 23, 1993, the following guidelines serve as an alternate to the Model I form of the thesis. Within these guidelines, the faculty of each doctoral degree program has the

right to add restrictions and requirements or elect not to adopt this format for theses in that particular degree program or for a particular student.

This model allows students to use manuscripts or papers as a major component of their theses. The reason for the introduction of this option is that an essential part of graduate student training must be the preparation of papers for publication. This skill is essential for future success as research scientists. Use of this model will allow students to focus their energy into learning how to prepare publishable manuscripts rather than that of a standard thesis. The Manuscript Thesis Model will not change the quantity or quality of research that is required for earning a degree, nor will it alter the amount of information included in the thesis. It will only alter the way in which the data is presented.

### **Eligibility**

**Permission to use the Manuscript Thesis Model will depend on the student's written agreement with his/her Research Committee prior to the writing of the thesis. Refer to the section in this Guide on the "Research Committee."**

The Research Committee must ascertain that the student has contributed substantially and significantly to the work of the writing of each of the papers included in the thesis. Under these conditions, papers on which the student is not the first author could be included. There is no prescribed minimum number of papers which must be included in the Manuscript Thesis Model. If the Research Committee believes that a cohesive thesis can be written with the prepared manuscripts, then the model can be used. In any case, regardless of the thesis format chosen, and as mentioned previously, the student should have brought the research to a stage of completion such that at least one publication to which the student has made a primary contribution has been accepted for publication or published in a peer-reviewed journal.

### **Organization**

The general form of the Manuscript Thesis Model should conform to the form described in the Model I section above regarding all elements in the writing of any scholarly work, i.e. *mechanics; formatting; use of symbols, abbreviations, figures, tables, references, etc.*

The Copy Sequence, however, will differ from the "Main Text" section of Model I as follows:

Introduction: This section will be a thorough review of the literature related to the thesis. It will be much more extensive than that found in the Introduction of the included manuscripts.

Materials and Methods: Details of materials, methodologies and techniques are included in this section to provide information **not included** in the manuscripts.

Manuscripts / papers: Manuscripts that have been published, are “in press” (accepted for publication, but not yet published), or are in manuscript form but not yet accepted for publication are included in this section. The style of the manuscripts will be governed by the “Directions to Authors” for the journal in which the paper has been or is to be published. Publication status will be included with each of the manuscripts.

**References** within individual manuscripts should be included at the end of each manuscript. The listing of **Figures and Tables** should be divided by thesis section, directly corresponding to the manuscript/paper section where they reside, and retaining the numerical order of the figures and tables as they appear in the manuscript/paper.

The **format** of each manuscript should be consistent with the rest of the thesis. Therefore, the student is advised to keep an original print of each manuscript, whether hardcopy or on diskette, and original photographs or figures in order to retain format, page size, and font consistency. Reprints from the publications where the manuscripts appeared are not allowed within the body of the thesis.

Results: Additional results obtained by the candidate with relevance to the thesis topic but not in manuscript format may be incorporated into the thesis in this section as distinct chapters according to the Model I guidelines.

Discussion: The objective of this section is to unify the results found in the papers and the supplementary data into a single expanded discussion. At the Research Committee’s discretion, areas such as future research directions based on the results of the thesis may also be included.

References: Should include all citations in the thesis document other than from the Manuscripts/Papers. For clarity of reference, citations from the latter may also be included in this section.