THESIS GUIDELINES FOR CS/IT MASTER’S DEGREE STUDENTS AT HOOD COLLEGE

General Information
Students should carefully review the most current Hood College Catalog (also available on the Hood College web site: www.hood.edu) and seek the advice of their academic adviser before registering for and beginning their final Thesis.

Thesis Adviser
Prior to registration, the student is responsible for submitting a Thesis proposal approved by the reading committee (see below), and for securing an adviser to oversee the Thesis. External, off-site (off-campus) advisers must be approved by the Graduate School. In such case, it is the student's responsibility to forward a Curriculum Vitae and three letters of recommendation in support of the adviser to the Program Director prior to student registering for the Thesis.

Final approval of the adviser is made by the Dean of the Graduate School, based upon the credentials of the proposed adviser and the recommendation of the Program Director made in conjunction with the department.

Registering for Thesis Credits
The Thesis requires planning on the part of the student well in advance of the semester in which the student wishes to enroll. Students should first develop the proposal in consultation with the Thesis adviser. Students completing a Thesis must register during the regular graduate school registration period. Registration should occur prior to beginning the research. The actual course number has a departmental prefix which would be CS or IT. To register for the course, students must submit a written proposal to their Reading Committee for review and approval and obtain signatures of approval from their adviser (note the qualifications for adviser above), Program Director, and any other faculty/committee members required by the department. The approved proposal and required signatures must be submitted to the Registrar’s Office with the “Permission to Enroll” form, which can be found online at www.hood.edu/gradforms to complete the registration process.

The course is a six-credit course and must be registered and billed at once. If the Thesis is not completed within the same semester for which it was originally registered, a grade of IP (In Progress) will be assigned until the Thesis has been completed, defended, and finalized. Students will continue to be enrolled in the Thesis as IP each Fall and Spring semester until the Thesis is complete. This continued enrollment will incur charges from the Accounting office for the Comprehensive Fee (see Tuition and Fees).

Reading Committee
The approved Thesis adviser serves as chair of the Reading Committee. The adviser and the student, in consultation, will identify at least two additional persons to serve on the Reading Committee. At least one member of the committee must be a full-time faculty member in the sponsoring department. Additional member(s) of the committee may be an AC faculty member in the degree program, another faculty member from the department, or another professional working on that research topic. For non-members of the faculty (external professionals), a Curriculum Vitae and one letter of recommendation must be submitted to the department chair or Program Director, who approves such a member. The reading committee should be kept informed on progress of the Thesis, and should meet as required to help guide the research. The committee should meet at least once before the official Oral Defense (Thesis presentation).
**Laboratory Facilities**

Hood College may not be able to provide laboratory facilities for all of the students engaged in research. In cases where the student elects to do a Thesis that requires the use of laboratory facilities outside of Hood College, locating and receiving approval to use a laboratory research facility is the responsibility of the student.

**Oral Defense**

An oral defense of the Thesis is required and will be conducted by the reading committee at an agreed upon date and at a specified location at Hood College. To schedule a location on campus, the Administrative Assistant for the student’s degree program should be contacted. Defense dates should not be set until the Thesis adviser and the reading committee approves the finalized draft. Defense dates are not permitted in the two weeks period succeeding (following) the final submission date for Thesis set by the Graduate School (see Academic Calendar). Therefore, the student should submit the Thesis at a minimum two weeks before the oral defense, in its final form, to the adviser, reading committee members, Program Director and Dean of the Graduate School. The Dean of the Graduate School and the Program Director should be invited to attend the defense, whether or not they are members of the reading committee.

The candidate should expect to present the research and findings in a professional manner, similar to presentations at a professional meeting. The use of well-prepared graphs, charts, and other explanatory aids is encouraged. The candidate will be expected to explain the research and to answer questions relating to the Thesis topic. The oral defense may be attended by members of the sponsoring department, the Dean of the Graduate School, and others in the research group interested in the topic, subject to the approval of the reading committee. Normally, the presentation of the data by the student is an open event to faculty, students and other invitees. However, the question and answer session is closed and attended only by the student, the reading committee members, Program Director, Dean of the Graduate School, and (at their request) members of the departmental graduate faculty.

**Approval of Master's Thesis**

The Thesis is approved after the oral defense and after corrections recommended by the Thesis adviser and reading committee, Program Director and Dean of the Graduate School have been made to the initially submitted Thesis. Signatures on the title page will indicate the final approval. (Names of individuals who sign the title page should be typed below the signature line.) Final committee authorization and signatures of the Program Director and the Dean of the Graduate School are required before the Thesis is submitted to the library for binding. Copies of the title page submitted to the Graduate School must bear original signatures. Photocopies will not be accepted and will prevent final acceptance of the Thesis.

**THESIS REQUIREMENTS FOR ALL STUDENTS**

**Copyright**

Under the Copyright Act of 1976, the "copyright in the work of authorship" becomes the property of the author who created it. For further information, please refer to the Copyright Office, Library of Congress, Washington, DC 20559.

Students completing a Thesis must ensure to obtain permission before using copyrighted materials within their Thesis. Permission to use copyrighted materials, for example, tables and figures, must be obtained from the holder of the copyright. The student needs to carefully search and locate the source of the copyright and obtain permission to use the copyrighted materials in the document. The permission to use copyrighted materials
should be referenced in the Thesis at the point where such materials are presented. The student must retain copies of the copyright use permissions, and supply them to Hood College upon request. Students completing a Thesis are able to facilitate the use of their research and findings by including a copyright waiver as part of the document.

Copyright Waiver
In order to permit others to utilize the research and findings, the following statement should appear in the document on the page immediately following the title page, with the heading in standard format: “I do/do not authorize Hood College to lend this Thesis, or reproductions of it, in total or in part, at the request of other institutions or individuals for the purpose of scholarly research.” Please circle do or do not.

Acknowledgment of Hood College in Publications
The Graduate School at Hood College should be acknowledged in publications that result From the Thesis research. A simple statement of acknowledgment is sufficient. An appropriate example would be “Research reported in this document was originally published in a

Master's degree Thesis sponsored by the Department of ______________
and The Graduate School at Hood College in Frederick, Maryland.”

Headings, Spacing, and Margins
Section headings should contain all uppercase letters, be boldface, and centered at the top of a new page. All text should be double spaced with a left hand margin of 1.5 inches (3.8 cm.) and with right, top, and bottom margins of 1.0 inch (2.5 cm.). The Graduate School will not accept Thesis that violate the above margin requirements.

The one exception to this is allowed on a "facing" legend page where the right margin (adjacent to the spine) is 1.5 inches and the left margin (toward the outer edge) is 1 inch. The margin requirements apply to all tables and figures as well as pages with text. A facing figure legend page and the figure together have one page number.

Fonts and Font sizes
Times New Roman Font should be used. Font sizes of 12 point are recommended for Thesis work. Standard typefaces should be used, either proportional or monospace. Justification at the right margin is optional. Reduction of Tables or Figures such that type size is smaller than 10 point is not acceptable.

Preliminary pages
All of the below-named sections should begin on separate pages and must be double-spaced. The preliminary pages should be numbered in lower case Roman numerals located at the bottom right-hand corner of each page. The title page is counted as page “i” but is not numbered. The preliminary pages should appear in the order specified below.

a. Title Page (see sample page in this document)
b. Statement of Use and Copyright Waiver (see example page)
c. Dedication (this page is optional)
d. Acknowledgements
e. Table of Contents
f. List of Figures – should include the page location of each Figure and short captions
   • Example: Figure 1: Example of network with DMZ……………………………5
g. List of Tables – should include the page location of each Table and short captions
Main body of the text
The main body of the text should be numbered in Arabic numerals located at the bottom right-hand corner of each page. The first page is counted as page “1”. If you use chapters, each chapter should begin on a new page.

Content Sections
Section headings should be centered, bolded, and in all uppercase letters. Content sections are presented according to the following guidelines:

Abstract -- The abstract should be a short, concise summary of the thesis outlining the purpose of the work, the rationale and method, and highlighting the most significant findings. The maximum length of the abstract is 150 words.

Introduction -- This section is used to describe the rationale for the thesis and to provide background information that is necessary for the understanding of the problem that is being solved. The introduction should make clear the significance of the research in the context of the wider body of scientific knowledge, and it should have a clear statement of purpose.

Literature Review -- This section provides a detailed overview of previously published relevant work that serves as a foundation and prelude to the thesis. The review of the literature should be current and thorough, encompassing all pertinent references. Subheadings may be used, and are helpful for organizing the information. In general, it is better and in favor of excess length than to abbreviate this section. Figures and tables may be used to enhance the reader’s understanding of the related research.

Model Design -- This section should describe the proposed model that is being implemented in detail. In addition, any algorithms and/or equations used to implement the model or other supporting information relevant to the model design should be explained. Figures should be included to enhance the understanding of the proposed model.

Experiment (or Simulation) -- This section should describe in detail all of the tools and methods used to conduct the research. The purpose of this section is to provide enough information so that another scientifically knowledgeable person could duplicate your data with only the thesis available as an information source. Tables and figures may be included in this section. This section should make clear all of the procedures performed by the candidate. The materials used to conduct the experiment or simulation, e.g. datasets, analysis tools, software, etc., should be explained as well as the experimental process. Brief explanations of primary results may also be discussed in this section.

Results and Discussion -- This section presents a comprehensive picture of all the research results and data. More data is included in a thesis than in a scientific paper. This section usually contains tables and figures, which should be on the page immediately following their first mention in the text. It is also permissible to incorporate tables and figures into the text at the point where they are mentioned. Tables and figures are numbered consecutively (Arabic numerals) throughout the thesis document. Numbering for tables and figures is independent (start at Table 1 and Figure 1, etc.). Each table or figure has a caption and is listed by page number in the table of contents page. If space for the caption is a problem, the facing page method can be used. In this case, the figure and its caption share one page number. Each figure or table is interpreted and explained in the text. Do not expect the reader to look at numbers in a table and extrapolate. Write out descriptions of all the tabular and figure data as part of the text, along with appropriate comments and
observations relating to collection of the data. This section should also critique and interpret the results. Describe conclusions and compare findings with other reported data. Where there is agreement, use it for validation. Where there is disagreement, suggest reasons and explanations.

**Conclusion & Future Work** -- The conclusion should summarize the thesis and major findings. Any future work should also be discussed.

**References** -- The list of references should be single-spaced and arranged in order by year from most recent to least recent. (See example references section.)

**Appendices** -- Some data may be included in appendices if the data are (a) not original work of the candidate, but required to understand the Thesis, (b) useful, but not results of research (tables of common data), or (c) so extensive it may interrupt the flow of the thesis (e.g., many photographs or specialized graphics, examples of raw data, extensive or detailed summary of results).

**THESIS GUIDELINES FOR MASTER'S DEGREE STUDENTS AT HOOD COLLEGE IN THE DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY**

**Preliminary pages**
All of the below-named sections should begin on separate pages and must be double-spaced. The preliminary pages should be numbered in lower case Roman numerals located at the bottom center of each page. The title page is counted as page “i” but is not numbered. The preliminary pages should appear in the order specified below.

a. Title page (see sample page in this document)
b. Statement of Use and Copyright waiver (see example page)
c. Dedication (this page is optional)
d. Acknowledgments and Sponsorship. Table of Contents
f. Abstract
g. List of Tables – should include the page location of each Table, and short legends
h. List of Figures – should include the page location of each Figure, and short legends
i. List of Abbreviations (optional)

**Main body of the text**
The main body of the text should be numbered in Arabic numerals located at the bottom center of each page. The first page is counted as page “1” but is not numbered. If you use chapters, each chapter should begin on a new page.

**Content Sections**
Section headings should be centered, capitalized, and should begin on a new page. Content sections are presented according to the following guidelines:

**Abstract** -- The abstract should be a short, concise summary of the Thesis outlining the purpose of the work, the rationale and method, and highlighting the most significant findings. The maximum length of the abstract is 150 words.

**Introduction** -- This section is used to describe the rationale for the Thesis and to provide an overview of previously published relevant work that serves as a foundation and
prelude to the Thesis. Thus, it encompasses the introduction, rationale, and review of the primary literature often used in grant proposals and publications. If a hypothesis is being tested, it is often stated explicitly in the introduction. The introduction should make clear the significance of the research in the context of the wider body of scientific knowledge, and it should have a clear statement of purpose. The review of the literature should be current and thorough, encompassing all pertinent references. Subheadings may be used, and are helpful for organizing the information. In general, it is better to err in favor of excess length than to abbreviate this section. Tables and figures may be used in the introduction.

*Materials and Methods* -- This section should describe in detail all of the methods, protocols, reagents, etc. used to conduct the research. In a thesis, as contrasted to a journal article, the purpose of this section is to provide enough information so that another scientifically knowledgeable person could duplicate your data with only the thesis available as an information source. Tables and figures may be included in this section (see below). This section should make clear all of the procedures performed by the candidate, as well as sources of reagents not prepared by the candidate. This section should describe data collection and analysis methods (e.g. description of statistical analysis). Use of abbreviations is acceptable, but must be used consistently. Abbreviations should be tabulated in the preliminary pages (see above). Numbers should be spelled out only if they begin a sentence.

*Results* -- This section presents a comprehensive picture of all the research results and data. More data is included in a thesis than in a scientific paper. The supporting data, e.g., toxicity curves with neomycin-resistance, are included -- whereas in a paper the results would be described briefly. Preliminary standardization of an assay, e.g., ELISA, would be incorporated so that someone reading the thesis would be instructed and fully informed. This section usually contains tables and figures, **which should be on the page immediately following their first mention in the text.** It is also permissible to incorporate tables and figures into the text at the point where they are mentioned. Tables and figures are numbered consecutively (Arabic numerals) throughout the thesis document. Numbering for tables and figures is independent (start at Table 1 and Figure 1, etc.). Each table or figure has a legend and a title, and is listed by page number in the contents pages. If space for the legend is a problem, the facing page method can be used. In this case, the figure and its legend **share one page number.** Each figure or table is interpreted and explained in the text. Do not expect the reader to look at numbers in a table and extrapolate. Write out descriptions of all the tabular and figure data as part of the text, along with appropriate comments and observations relating to collection of the data.

*Discussion* -- Having presented the actual data in the results section, this section is for critique and interpretation. Describe conclusions and compare findings with other reported data. Where there is agreement, use it for validation. Where there is disagreement, suggest reasons and explanations. Suggest future directions for research.

Endnote ®, a commercial reference management software program, is available to all Hood College students. This software package can manage reference and bibliographic material.

*References Within the Text* -- Reference citations within the text should follow the IEEE Citation Style.

*References in Reference Section* -- The list of references in the references section should follow the IEEE Citation Style.
Internet references -- References to pages on the World Wide Web should follow the IEEE/Computer Society Citation Style.

Appendices -- Some data may be included in appendices if the data are (a) not original work of the candidate, but required to understand the Thesis, (b) useful, but not results of research (tables of common data), or (c) so extensive it may interrupt the flow of the thesis (e.g., many photographs or specialized graphics). It is acceptable to include various Software Engineering artifacts such as the Requirements Analysis, Specification, Design and Testing documents or source-code segments.

Digital Media -- It is encouraged for both Software Engineering Thesis and Field Work Thesis that the students provide an electronic version of all their material in a CD-ROM or DVD. This would include any source, code, documentation, software libraries and executable code related to the Thesis.
APPENDICES

(Copyright Letter Example)

Date:

Holder of Copyright
Street Address
City, State Zip

Dear Holder of Copyright:

I am a graduate student in the Computer Science or Information Technology Master's degree program at Hood College in Frederick Maryland. My Thesis is __________. I am requesting permission to include in my Thesis the following material:

(Include all relevant information about your request: title, page numbers, year of publication, etc.)

If permission is granted, proper acknowledgment and credit will be incorporated in the document.

Sincerely,

Your Name
Contact Information
AUTOMATIC LOG FILE ANALYSIS IN NETWORK FORENSICS USING KNOWLEDGE FLOW PARADIGMS

by

Carol Jim

B.A. (Hood College) 2006

THESIS

Submitted in partial satisfaction of the requirements for the degree of

MASTER OF SCIENCE

in

COMPUTER SCIENCE

in the

GRADUATE SCHOOL

of

HOOD COLLEGE

May 2010

Accepted:

____________________________________  Maria Green Cowles, Ph.D.
Thesis Advisor

Dean of the Graduate School

____________________________________  Xinlian Liu, Ph.D.
Thesis Co-Advisor

Director, Computer Science Program

____________________________________
Committee Member

Committee Member
(Sample Page for Copyright Waiver ) (note: choose one option for your document)

STATEMENT OF USE AND COPYRIGHT WAIVER

I authorize Hood College to lend this thesis, or reproductions of it, in total or part, at the request of other institutions or individuals for the purpose of scholarly research.

or

I do not authorize Hood College to lend this thesis, or reproductions of it, in total or part, at the request of other institutions or individuals for the purpose of scholarly research.
TABLE OF CONTENTS

ABSTRACT

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

INTRODUCTION

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MATERIALS AND METHODS

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   Optional Secondary Heading

RESULTS

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DISCUSSION

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REFERENCES
ABSTRACT

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<tr>
<td>AMV</td>
<td>avian myeloblastosis virus</td>
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<tr>
<td>BSA</td>
<td>bovine serum albumin</td>
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<td>cDNA</td>
<td>complementary DNA</td>
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<td>ELISA</td>
<td>enzyme-linked immunosorbent assay</td>
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<td>MHC II</td>
<td>major histocompatibility complex class II</td>
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REFERENCES


