Department of Computer Science
Field Work Project/Software Engineering Project CS 585/CS 595/IT 585

September 2012

In order to begin a either a Software Engineering Project or a Field Work Project, students must:
a) Identify a topic of interest, and
b) Find a faculty adviser to supervise the Project. The adviser does not necessarily need to be the same person as the academic adviser.

For both the Software Engineering Project and the Field Work Project, the work could be performed off-campus, which may be the student's work site. If the project will be carried out off-campus, an on-site (external) adviser would also be required (in addition to the Hood faculty adviser) to provide supervision and mentorship.

In choosing a Project topic students need to consider the following:

1. What topics are of interest to you?

2. What skills do you know or will you need to develop in order to be able to carry out the project you have chosen? A good strategy is to have your project be a training ground that you can use to develop the skills and practical knowledge to make you more employable.

3. What are the time constraints? Can you work in the evenings and on weekends to finish your project or will it require larger blocks of time? Can you work on a project full time for a short period of time (e.g. a month in the summer)? Projects rarely fit into the neat 3-hour, 1-day-a-week schedules like your classes did, so you will need to make some adjustments for this.

Once you have given these questions some thought and arrived at less tentative answers, contact potential advisers and make appointments with them to talk about where your interests and theirs may overlap. You probably have some ideas about what topics most faculty study from having them as instructors in classes or talking with them informally. You can also do a literature search to see what they have published recently.

Once you and an adviser have mutually agreed to work together, your next step is to write a proposal for the work you will do. An approved proposal is needed to allow you to enroll in your culminating project.

EXPECTED DELIVERABLES
For both the Software Engineering Project and the Field Work Project, the specific project requirements and deliverable are determined by the designated project adviser. At minimum, both types of projects require the generation of an extensive project

document (equivalent to a thesis) that fully describes the background, activities performed, experimentation, findings, results, tools, process, methodologies, etc. used during the project. The project document is a scholarly document and may be augmented in the Appendices by Software Engineering artifacts such as a Requirements Analysis, Specification, Design and Testing documents or source-code segments.

ADMINISTRATIVE PROCEDURES

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 beginning their final project.

Project Adviser
The student is responsible for submitting a project proposal approved by the reading committee (see below), and for securing an adviser to oversee the project. For external, off-site (off-campus) advisers, the Graduate School must approve them. It is, in this case, 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 registration for the project by the student.

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 upon approval by the department

Registering for Project Credits
Students completing a project 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 is CS. To register for the course, students must submit a written proposal to their reading committee for review and obtain signatures of approval from their adviser (note the qualifications for adviser above), Program Director, and Dean of the Graduate School. The approved proposal and required signatures must be submitted to the Registrar's Office to complete the registration process. The project requires planning on the part of the student well in advance of the semester in which the student wishes to enroll. Students first develop the proposal in consultation with the project adviser. Once the proposal is approved, the student submits a "Permission to Enroll" form to the Registrar's Office and formally enrolls in the thesis.

The course can be a three or six-credit course. If the project is not completed within the same semester for which it was originally registered, a grade of IP (In Progress) will be assigned until the project has been completed, defended, and finalized.

Reading Committee
The approved 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 equivalency (AC) faculty member in the sponsoring department. Additional members of the committee may be an AC faculty member in the degree program, another faculty member from the department, or another professional working on the research topic. For non-members of the faculty, 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 of progress on the project, and should meet as required to help guide the research. The committee should meet at least once before the project 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 project 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 project is required and will be conducted by the reading committee at an agreed upon date and at a specified location. 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 project adviser and the reading committee approves the draft. Defense dates are not permitted in the two weeks period prior to the final submission date set by the Graduate School. At least two weeks before the oral defense the student should submit the project, in 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 project 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 Project
The project is approved after the oral defense and after corrections recommended by the project adviser and reading committee, Program Director and Dean of the Graduate School have been completed. Signatures on the title page indicate 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 project is submitted to the library for binding. Copies of the title page submitted to the Graduate School must bear original signatures, Photocopies are not acceptable and will prevent final acceptance of the project.

Grade for Project
The project is graded "S" (satisfactory) or "U" (unsatisfactory). After the first semester of research, the Adviser awards an interim grade of "IP". The project adviser awards the final grade. The grade of "S" has no effect upon the student's grade point average. The grade of "U" has the same effect as a grade of "F" (failure). A final grade of "U" on the project usually results in the student's dismissal from the Master's degree program.

An unsatisfactory performance at the oral defense of the project may result in the student's dismissal from the Master's Degree program. The Program Director, in consultation with the adviser, the reading committee and the Dean of the Graduate School, may allow the student one additional opportunity to defend the project. Unsatisfactory performance at the retake will result in dismissal with no additional opportunities to complete the degree.

PROJECT 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 project must take care to obtain permission before using copyrighted materials within their project. Permission to use copyrighted materials, for example, tables and figures, must be obtained from the holder of the copyright. The student needs to search carefully for 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 project at the point where such materials are presented. The student must retain copies of the copyright permissions, and supply them to Hood College upon request. Students completing a project 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 project, 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 of Hood College should be acknowledged in publications that result from 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 project sponsored by the Department of _____ and submitted to The Graduate School of Hood College in Frederick, Maryland."

Thesis Paper and Printing
The original copy of the project for the Hood College Library must be on plain bright white thesis paper, which is available from the Hood College Bookstore or office supply stores. A second identical copy, for the sponsoring department, is also required. **The minimum requirement is a 20 lb., 25% rag or cotton content paper.** Additional copies may be made at the discretion of the student. However, waiting for the reading committee's final approval before producing multiple copies will help to avoid unnecessary expense. The project should be typed or produced on a high quality printer. Both official project documents (for the Library and the Department) must be originals, not photocopies. Font sizes of 12 point are recommended for project 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.

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 projects that violate these margin requirements.**

The one exception to this is 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.

Binding and Distribution
The original typed or printed project copy becomes the property of the Hood College Beneficial-Hodson Library. The sponsoring department retains the second copy for its files. Title pages for both of these copies must bear **original** signatures (not photocopies) of the adviser, reading committee members, Program Director, and Graduate School Dean. Additional copies may be bound at the student's request for an additional fee. All final copies are to be submitted to the Graduate School prior to the published deadline for each academic semester. The Graduate School will send the project to the Library for binding and archiving. Instructions for binding and guidelines for archiving have been published by the Hood College Beneficial-Hodson Library and are included in this document. The student is responsible for all fees associated with the binding and archiving of their project.

Deadlines
The importance of observing published deadlines for final submission of the completed and approved project cannot be overemphasized. Students are urged to follow closely and carefully the published dates for submission. Arrangements for the oral defense or presentation should be made early enough to allow time for completion of required corrections. This will enable the candidate to earn the Master's Degree at the earliest possible date. Past experience has shown that the most common reason for candidates to receive their diplomas later than anticipated is because of poor planning with respect to the deadlines.

As a general guideline, all projects are due in final form with signed cover pages to the Graduate School two weeks prior to the last day of classes in the fall or spring semester. However, be sure to check the Catalog or contact the Graduate School to confirm the assigned date each term.

PROJECT GUIDELINES FOR MASTER'S DEGREE STUDENTS AT HOOD COLLEGE

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. Abstract

d. Dedication (this page is optional)
e. Acknowledgments and Sponsorship
f. List of Tables – should include the page location of each table, and short legends
g. List of Figures – should include the page location of each Figure, and short legends
h. 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 project 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 project and to provide an overview of previously published relevant work that serves as a foundation and prelude to the project. 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 analyses). 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 project, (b) useful, but not results of research (tables of common data), or (c) so extensive it may interrupt the flow of the thesis or project (e.g., many photographs or specialized graphics).   It is acceptable to include various Software Engineering artifacts such as a Requirements Analysis, Specification, Design and Testing documents or source-code segments.

Digital Media – It is encouraged for both Software Engineering Projects and Field Work Projects 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 project.

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 project is _____. I am requesting permission to include in my project 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

Sample Title Page

AN ENHANCED RANDOM WALK ALGORITHM IN DETERMINING

STABILITY OF A DYNAMIC NETWORK

by

Marjorie Smith

B.S. (University of Maryland) 1983

Field Work Project **or** Software Engineering Project

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 2012

Accepted:

_____

(Type Name)
Committee Member

_____

(Type Name)
Committee Member

_____

(Type Name)
Thesis Adviser

_____

(Type Name)
Director, Computer Science Program

_____

Allen P. Flora, Ph.D.
Dean of the Graduate School

Title Page Signature Guidelines

Names of the individuals signing the title page should be typed in the space below their signature line, above their title.

HOOD COLLEGE BENEFICIAL-HODSON LIBRARY

Instructions for Binding

The following procedures apply to Masters Field Work Projects and Computer Science Software Engineering projects, all of which are to be submitted to the Hood College Library for binding. A minimum of two copies (one for permanent storage in the Library, and one for the originating Department) will be submitted for binding, and should conform to the guidelines enumerated below.

All pages must have at least 1 ½ inch left margins, and 1 inch upper, bottom, and right margins. These are minimum figures. Photocopies should have the same margins as originals. When making photocopies, special care should be taken when placing the original on the machine so that copies are neither off center nor out of alignment.

Page sequences should be correct and verified. <u>The bindery will not correct pagination errors</u>. Pagination should be uniform and consecutive, i.e., all preliminary pages should appear in Roman numerals in one sequence, and beginning with the title page (which is "page 1," but is not numbered), all content pages should appear in Arabic numerals in one sequence. If folded pages are included, then these should be folded at least one inch from the right margin to prevent their being cut during the trimming process at the bindery.

Supplementary materials, such as separate electronic disks or large maps or charts that are not to be bound into the finished "book," should be accompanied by an explanation of how they will be used in relation to the project. E.g., an accompanying CD with raw statistical data might have a note appended stating "Raw statistics, submitted as supporting documentation." This helps the Library, as it prepares the materials for the bindery, to determine the best way for the bindery to incorporate these materials into the book.

If photographs are included, they should be firmly glued to standard 8 1/2 inch x 11-inch pages, and should not move on the page when handled. Full-page photographs come out of the bindery process best. Page protectors may NOT be used because they prevent trimming.

Lightweight papers must be avoided, both for the original and for copies; 20-pound bond paper is the minimum requirement. Paper should be "bright white" in color. Extraneous decorations should not be added to any page. Only the text (which includes, as applicable, charts, tables, illustrations, etc.) should appear on the pages.

<u>The Library asks that the following procedures be observed</u>:

- Projects ready for binding should be submitted to the Graduate Office in file folders or a box to protect the pages. Please be sure that formatting guidelines have been followed and that all necessary documentation accompanies your

submission. Upon receipt, projects will be forwarded to the Library Collection Development Services Department. Binding orders are sent from the Library when a minimum order has been accumulated, therefore, there may be a delay of several months from submission to the Graduate Office until projects are shipped to the bindery while the minimum number of items for binding is accumulated.

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- The Library will retain one original copy (with <u>original</u> signatures on the title page), and the originating department will retain the second.

- The author's full name, address, telephone number and e-mail address should be included with each copy to be bound.

- The cost to the author for binding is $20.00 per copy. Multiple copies should be pre-sorted into complete documents, so that each copy of your project has all of the requisite elements in its proper place. Materials submitted to the Library go out with the next bindery shipment and are usually returned to the Library within five weeks of shipment. Payment for binding is to be made to the Graduate School, and checks for binding should be made payable to Hood College.

- Students should consider whether they will be in a position to pick up personal copies from the library when the binding is completed. If not, they can request that personal copies be mailed to them. There is a charge of $5.00 per copy for this service. Mailing charges can be included in the total for binding services, so only one check is necessary. As noted above, payment should be made to the Graduate School, with checks payable to Hood College.

- Upon receipt from the bindery, the Library's copy of the Master's Project (Thesis, Mock Grant Proposal, or Field Work Project,) is cataloged under author, title, and appropriate subject entries. It is then shelved alphabetically by author's last name in the Master's Project section and is available for use only in the Library.

- If the student has ordered additional personal copies of the thesis or project, he or she will be notified by letter when the bound copies are received. It is expected that the student will pick the materials up from the library upon notification.