

## **MS CSIS Graduate Program Thesis/Project Guidelines**

Students in the MS CSIS program may choose to complete a master's thesis or a capstone project. One of the most common questions students have is, “what is the difference between a thesis and a capstone project?”

A capstone project requires background analysis and involves an applied project that results in solving a specific business or scientific problem. These projects may include software applications as part of their solution. A capstone project often addresses practical questions (such as how best to solve a real-world business problem). While projects may not constitute original research, they nonetheless require significant background analysis. This background analysis may include, but is not limited to, conducting library research, exploring comparable technologies, reviewing best practices and models, examining similar projects, exploring costs and benefits, and an analysis of findings. Therefore, each project must be accompanied by a technical report that describes or documents the background analysis performed, the methodologies used in the background analysis, references to work that was reviewed through the analysis, and lessons learned in the process.

A thesis requires an extensive literature survey on existing works and has the potential to generate new knowledge or improve upon existing techniques. One of the primary goals of masters-level thesis work is to teach students how to do research. Two definitions of a thesis include:

- “...[a thesis] give[s] the student training in planning, carrying out and presenting an independent piece of work and to provide contact with research and development.”
- “ ...[a] thesis is a scholarly treatment of a subject or an investigative treatment of a problem, which is sufficiently limited in scope to ensure thoroughness.”

The primary difference between the thesis option and the project option is that a thesis is a “scholarly treatment”. The literature review is more thorough, the experimental design and analysis is more complete.

In summary, a capstone project differs from a thesis in one significant way: A thesis presents research that contributes to the scholarly literature of computer science and /or information systems. A project, in contrast, contributes to the computer science and information systems professions via applied research and/or creative accomplishment. With a capstone project, the student spends the vast bulk of his/her time investigating solution(s) to real world problems. With a thesis option, the student spends more time on 1) experimental design and implementation and 2) crafting a thesis document.

**The Proposal:** Students preparing a project or a thesis must write a proposal and gain approval from three committee members via signatures on the “Proposal Notification and Defense” form, which is available online. Your proposal and committee should be approved before work on your project or thesis begins and before you can earn credit for the thesis or project. There should be a formal proposal approval meeting (often in the form of a presentation and defense of the proposed work) with the student and all three committee members. All three committee members must unanimously approve the proposal. One of the members of your committee must be your ‘thesis/project’ advisor.

All committee members (the Thesis and Project Committee section is shown on the following page) receive and approve your written proposal, using the “Proposal Notification and Defense” form. This protects you from having a person on your committee who does not fully understand or support your work. Don’t forget to obtain human subjects compliance approval if you are planning a thesis or project involving human subjects.

**Proposal Guidelines:** Generally, you will include what you want to study or the problem to be addressed, how you plan to approach it, and why it should be studied. State your hypothesis and/or goals, review relevant literature and contextual information, explain methodologies or procedures to be followed, and describe what the final product will look like.

Proposals vary in length and can contribute to the content of your finished thesis or project.

a) Thesis Proposal Guidelines

The Graduate School has guidelines pertaining to style, margins, footnotes, etc. You may find a copy of these guidelines, called the “Thesis Format Manual” online from the Graduate School home page. It is very important that your finished work adheres to these guidelines; otherwise it will not be accepted by the Graduate School and you will not graduate on time.

Typically, a thesis proposal includes a number of sections as described below. Of course, the content and subheads under each section will vary depending on the problem you are researching, your theoretical framework and the methodology you envision.

*I. Introduction.* This should consist of a brief summary of the problem you are proposing to investigate, what question/hypothesis you intend to address, and how you envision doing it. While this section is the first presented, it is best to write this after you have completed the rest of the proposal.

*II. Review of Literature Review and Analysis.* Here you review relevant literature that will enable you present a review of related work, describe the background analysis you performed, and to make a case for the significance of your research project. This is an interdisciplinary field. It is likely you will review more than one area of literature. Following this review, you should summarize the rationale for your research question or hypothesis drawn from all the area(s) of literature you have reviewed. Finally, you should clearly state your main research question or hypothesis.

*III. Methodology.* Here you describe your methodological plans as specifically as you can. Of course, the considerations you discuss here will vary depending on the nature of your research, e.g., whether quantitative or qualitative. The following are considerations you may need to discuss in a quantitative thesis: unit of analysis; population; sampling procedures; research instruments (questionnaire, coding categories); and reliability and validity. Everyone — regardless of method — will need to discuss the resources to be drawn upon and how they will be analyzed or interpreted. Some discussion of the limitations of your chosen approach may be appropriate.

*IV. Outline of Completed Thesis.* Outline the chapters you anticipate will comprise your completed thesis with a sentence or two describing each chapter. Typical chapters in a scientific thesis are: Introduction; Review of Literature; Methodology; Results; Discussion; Conclusions. Often a chapter on Historical (or other) Context of the Problem also is included and precedes (or sometimes follows) the Review of the Literature.

*V. Timeline of thesis milestones (see page 6).*

b) Capstone Project Proposal Guidelines

The organization of a project proposal should include the following:

*I. Introduction.* A brief summary of what problem, topic or issues you intend to address, and how you envision doing it. A couple paragraphs to a page should be sufficient. Even though this section is the first presented, it is best to write this after you have completed the rest of the proposal. The key question is why this project is important.

*II. Review and Analysis.* In this section you will review related work, present analyses performed, and make a case for the significance of your project. You should demonstrate a detailed understanding of the problem and related work. You should also present a convincing motivation for the project, i.e., what benefits to the organization and/or contribution to the profession will come out of the project.

*III. Methodology and Plan.* Describe the methodology and plan that will enable you to carry out the project.

*IV. Description of Completed Project.* Describe the specific deliverables that you will produce, and the overall end product of your project. Specific deliverables may include, but are not limited to source code, diagrams, documentation, a deployed system, a written report, etc. In effect, you are describing the anticipated results of your project, against which your actual finished results will be evaluated.

*V. Timeline of Capstone Project Milestones (see page 5).*

**Thesis/Project Proposal Oral Defense:** Once you have completed the written proposal you should schedule with your thesis/project advisor an “oral defense” of your proposal. The format of this presentation should be discussed with your advisor. This proposal defense is intended to clarify the thesis/research proposed and gain agreement from the committee on the amount and quality of work expected.

**Thesis or Project Committee:** The master’s committee is made up of a minimum of three members, including the thesis/project adviser who acts as the chair of your thesis or project. One member of your committee must be a graduate faculty member from the CSC area, and one member of your committee must be a graduate faculty member from the MIS area. Aside from the minimum of two CSIS faculty, the third member may be someone from outside the area including graduate faculty from another department. You may also request a fourth member to be a working professional expert in your particular area, etc. After you have chosen your committee, an “Establish Project/Thesis Committee” form should be completed and submitted to the MS CSIS Graduate Coordinator.

The thesis/project committee is student-chosen and based on faculty expertise. Members should be selected for their ability to contribute to your work. You should also make sure committee members will be available to serve on your committee during the terms you intend to do your work. This is especially important if you plan to graduate during the summer term, as many faculty hold a nine-month appointment and are not available during the summer term.

Students generally choose committee members after the thesis/project adviser is chosen but before the proposal is written. Your adviser — the committee chair — can be involved in selecting other committee members.

Beyond approving your project proposal, the role of members varies from committee to committee. You may have at least one committee member who was selected for his or her expertise in your particular area of interest or another outside area; you can then rely on that person for help in that area. Others may be general readers who read your chapters as you complete them. Based on discussions with your committee, you may submit draft

chapters to all members, or you may submit them only to your chair and have other members read only your revised chapters.

In any case, the role of your committee members should be discussed early in the process between the student and adviser; your adviser should help you determine a way to make the committee function smoothly. Additionally, committee members should be told up front what you expect from them. Your entire committee reads your finished work and gathers for your oral defense to approve your thesis or project.

**How to Begin Your Thesis or Project:** The topic is your choice. You may come up with it through courses, conversations with faculty, your own interests, etc. Talk with faculty and other students to determine whether your idea is feasible. You should have a working idea by the start of your second year of graduate school (or at least by the term preceding the term you intend to write your project). See suggested time line later in this document. Then, working with your adviser, write the proposal (see above).

**Final Oral Defense:** All students in the MS CSIS program must hold a final oral defense (this is different from the proposal defense). The oral defense takes place after you've completed your thesis or project. If you've completed all appropriate steps, a defense is a conversation between you and your committee about your work. The key is to make sure your committee supports your work prior to your oral defense. Your committee members must not agree to the defense if major revisions will be necessary. Expect your committee to find minor problems and make suggestions for revision at the oral defense.

The graduate student needs to submit a "Notification of Oral Defense" form along with the abstract to the Graduate School 10 working days before the oral defense is scheduled. You can locate the "Notification of Oral Defense" form on the Graduate School Web site. All committee members must be present at the oral defense.

At the end of the defense, your committee must either approve or disapprove your work; approval is necessary before you can graduate. It is common for committees to approve with changes and list changes that need to be made.

The oral defense is intended to be a public discourse and, as such, will be announced prior to the event. Please keep the Graduate School informed of the official title of your project or thesis and the time and place of your defense.

**Thesis or Project Approval and Graduation:** An "Application for Graduation" form must be filed with the Graduate School the semester before the term you plan to graduate (the Graduate School Web site lists deadlines). You can locate the application on the Graduate School Web site.

Projects are not subject to Graduate School approval; theses are. Therefore, theses require more paperwork. Overall, the MS CSIS Graduate Coordinator will work with your committee chair to ensure all appropriate forms are submitted on time, but it is advisable to keep in close contact with him/her to make sure your file is kept up to date.

Remember that students completing theses do not have the entire term they intend to graduate to complete their work. In order to meet deadlines for scheduling oral defenses and obtaining Graduate School approval, students should plan to dedicate only one-half to two-thirds of the term they intend to graduate to completing their thesis. The student must also allow time for the committee to review the thesis before the oral defense (a minimum of 10 working days recommended) and time for corrections to be made after the oral defense (a minimum of five days recommended).

Projects: Submit one copy of your final project, electronically in PDF format, to the MS CSIS Graduate Coordinator. You do not need to submit a copy to the Graduate School.

Thesis: You must submit an electronic copy of your thesis to the Graduate School by the stated deadline. You must also submit an electronic copy to the MS CSIS Graduate Coordinator.

A copy of your final project or thesis must be received by the stated deadline (check Web site for dates) in order for you to graduate.

**Suggested Time Line for Capstone Projects:** *Remember the application for graduation is made in the NEXT to LAST semester at UNCW; see Registrar's page for the exact date the application is due.*

Three Credit Capstone (these dates may be earlier in the semester, below are the deadline dates to meet the requirements; your committee chair may require these to be earlier). You may not take more than three credits of capstone credits in one semester.

1. Six weeks before the end of the previous semester (fall and spring), select and request members of your committee and committee chair.
2. Four weeks before the end of the previous semester submit a written proposal to your committee.
3. Schedule your proposal defense in the last two weeks of the semester.

Capstone Project Final Oral Defense (for summer dates see your committee chair)

4. Submit your written final report to your committee by November 1 or April 1.
5. The committee has 2 weeks to read your report and provide feedback to you.
6. If your committee chair agrees, schedule your oral defense within the last 2 weeks of the semester. Be sure to submit the "Notification of Oral Defense" form along with the abstract to the Graduate School 10 working days before the oral defense is scheduled. Prior to the final grade being issued, submit an electronic copy of your final project, in PDF format, to the MS CSIS Graduate Coordinator.

Six Credit Capstone (these dates may be earlier in the semester; below are the last dates to meet the requirements; your committee chair may adjust these to be earlier). You may not take more than three credits of capstone credits in one semester. *Special Note: A 6 credit capstone project is currently implemented by taking 3 hours of research project credit (594) and then either 3 hours of directed independent study (591) or an additional 3 hours of research project credit (594). This option should be discussed with your advisor to help you plan the two semester schedule.*

1. Select your committee chair and committee members by the end of the previous semester.
2. No later than 21 days into the previous semester of your project, submit a written proposal to your committee.
3. Your proposal defense must be within 35 days of the beginning of the previous semester of your capstone project.

Capstone Project Final Oral Defense (for summer dates see your committee chair)

4. Submit your written final report to your committee by November 1 or April 1.
5. The committee has 2 weeks to read your report and provide your feedback.
6. If your committee chair agrees, schedule your oral defense within the last two weeks of the semester. Be sure to submit the “Notification of Oral Defense” form along with the abstract to the Graduate School 10 working days before the oral defense is scheduled. Prior to the final grade being issued, submit an electronic copy of your final project, in PDF format, to the MS CSIS Graduate Coordinator.

**Suggested Time Line for Thesis:** *Remember application for graduation is made in the NEXT to LAST semester at UNC; see Registrar’s page for exact date the application is due.*

Six Credit Thesis (these dates may be earlier in the semester, below are the deadline dates to meet the requirements; your committee chair may adjust these to be earlier). You may not take more than three credits of thesis credits in one semester.

1. Select your committee chair and committee members by the end of the previous semester.
2. No later than 21 days into the previous semester of your thesis work, submit a written proposal to your committee.
3. Your proposal defense must be within 35 days of the beginning of the previous semester of your thesis work.

Thesis Final Oral Defense (for summer dates see your committee chair)

4. Submit your written final document to your committee by November 1 or April 1.
5. The committee has 2 weeks to read your thesis and provide feedback to you.

6. If your committee chair agrees, schedule your oral defense within the last two weeks of the semester. Be sure to submit “Notification of Oral Defense” form along with the abstract to the Graduate School 10 working days before the oral defense is scheduled. Prior to the final grade being issued, submit an electronic copy of your completed thesis, in PDF format, to the MS CSIS Graduate Coordinator. You must also submit an electronic file to the Graduate School by the stated deadline. (See Graduate School website)