Project vs. Thesis vs. Practicum Options

To fulfill the MS in Computer Science program requirements, students must select and successfully complete either the project or thesis option. To fulfill the MS in Applied Computer Science program requirements, students must select and successfully complete a Project or a Practicum option. Neither Thesis, Project, or Practicum may replace any other courses. Students who have not completed their degree after taking 6 credits of Thesis/Project/Practicum must take at least one credit per semester until the defense is completed and accepted by the School of Computing.

When considering these options, students need to determine which track better fits their plans:

- The thesis path directs students to apply new or known ideas often found in peer-reviewed articles, books, or dissertations to unique circumstances. The thesis should apply the idea to a concrete dataset to validate or invalidate the idea's application to the circumstances. A thesis may also propose new ideas that it subsequently validates or invalidates through experimental or logical/mathematical methods.

- The project path directs students to research and develop a new solution to a known problem. The research, development, testing, evaluation and resulting demonstration make up the deliverables for the project. Often, a project implements an idea proposed in a dissertation or peer-reviewed article. Often the research used provides expected outcomes to test the correctness of the project. Also, major software or hardware development projects may qualify for the project option.

- The practicum path directs students to complete an internship of 100 hours per credit hour for a total of six (6) credits, equaling at least 600 hours of work hours. While normally a student will complete a minimum of 6 credits, it may be advantageous to take additional credits of extra work experience for students who lack experience in computer science. The student must take at least 300 hours with one employer. No more than two employers can count toward graduation. The majority of work hours must be worked during the semester in which the student is registered for the practicum.

To help understand which category a particular development effort falls into, ask the following question: are you writing code to directly fulfill the requirements of your degree or are you writing code to generate data for analysis in support of your thesis?

Project/Thesis Procedure

To fulfill the MS in Computer Science program requirements, students must successfully complete, document, and defend an approved project or thesis. This process is completed while the student is registered for CPTR/CPHE 598 Project or CPTR/CPHE 599 Thesis. The student must complete at least six hours of CPTR/CPHE 598 or CPTR/CPHE 599 to graduate. After all coursework has been completed and the student has taken the required six hours of project/thesis credit, the student must take at least one project/thesis credit hour per semester until the project/thesis is completed and accepted.

To successfully complete a project or thesis, the student must satisfy the following requirements:

- Secure the permission of a faculty member in the School of Computing to be your major

project/thesis advisor prior to registering for any CPTR/CPHE 598 or CPTR/CPHE 599 credit hours. The major project/thesis advisor must be a current terminally degreed faculty member in the School of Computing. Co-advisors outside of the School of Computing may be allowed, but must receive approval from the School of Computing Graduate Coordinator prior to the initiation of project/thesis work.

- In consultation with your project/thesis advisor, recommend two members, in addition to your advisor(s), to sit on your project/thesis committee. A majority of the project/thesis committee must be compromised of current School of Computing faculty members. Committee member recommendations are made via the *Application for Candidacy* form, which must be submitted to schedule the applicant's project/thesis proposal examination.

- In consultation with your project/thesis advisor, prepare a written project/thesis proposal (see sections below for specific instructions on the content of these reports). The proposal report must be submitted to the project/thesis committee at least seven days prior to the scheduled oral proposal examination. The proposal report must be approved by the student's major project/thesis advisor prior to submission to the student's project/thesis committee.

- Prior to completion of the project/thesis proposal examination, meet individually with each member of the project/thesis committee. Ideally, meetings with committee members occur during the preparation of the proposal report to facilitate broad understanding of the student's project among committee members and to receive early feedback from the committee. Consult with your project/thesis advisor to determine the appropriate time for these meetings.

- Successfully pass a project/thesis proposal examination prior to starting the fourth credit hour of CPTR/CPHE 598 or CPTR/CPHE 599. The student should prepare a 15-20 minute oral presentation of their proposed project/thesis research, which they will defend in a closed meeting to their project/thesis committee.

- In primary consultation with your project/thesis advisor and secondary consultation with your project/thesis committee, successfully complete the proposed work/research and prepare a project report or thesis to defend publicly.

- Successfully defend your project report or thesis to your project/thesis committee and the public. A request to schedule the project/thesis defense is made via the *Application for Defense* form, which must be submitted to schedule the student's project/thesis defense. This form must be submitted at least ten days prior to the desired date of defense. Committee members expect to see a final draft of the project report or thesis at least seven days before submitting the *Application for Defense* form.

- *Thesis only:* To complete the thesis option, the student must publish a paper from their research and results in an approved, peer-reviewed conference proceedings or journal. It is expected that the student will present their paper at the selected conference.

Practicum Procedure

To fulfill the MS in Applied Computer Science program requirements, students must successfully complete, and present an approved project or practicum (for Project, see the previous description under Project/Thesis procedure). This process is completed while the student is registered for CPTR 597 Practicum. The student must complete at least six hours of CPTR 597 to graduate. After finishing 18 credits and one full certificate, the student can start a practicum internship. Before starting the practicum, the student must prepare, submit, and receive approval of their resume and a one-page internship proposal. After completion of the internship, the student will prepare a portfolio and make a defense

presentation detailing their experience. The student must take at least one practicum credit hour per semester until the practicum report is completed and accepted.

To successfully complete a practicum, the student must satisfy the following requirements:

- Secure the permission of a faculty member in the School of Computing to be your major practicum advisor prior to registering for any CPTR 597 credit hours. The major practicum advisor must be a current terminally degreed faculty member in the School of Computing. Co-advisors outside of the School of Computing may be allowed but must receive approval from the School of Computing Graduate Coordinator prior to the initiation of practicum work.

- In consultation with your practicum advisor, recommend two members, in addition to your advisor(s), to sit on your practicum committee. A majority of the practicum committee must be comprised of current School of Computing faculty members. Committee member recommendations are made via the *Application for Candidacy* form, which must be submitted to schedule the applicant's project/thesis proposal examination.

- Prepare a written internship proposal and present it to your advisor for acceptance.

- The internship proposal and resume must be accepted before starting CPTR 597.

- In consultation with your practicum advisor, successfully complete the proposed work and prepare a practicum portfolio and presentation to publicly defend.

- Successfully defend your portfolio to your practicum committee and the public. A request to schedule the practicum defense is made via the *Application for Defense* form, which must be submitted to schedule the student's project/thesis defense. This form must be submitted at least ten days prior to the desired date of defense. Committee members expect to see a final draft of the portfolio at least seven days before submitting the *Application for Defense* form.

Project/Thesis/Practicum Committee

Masters candidates must have a standing project/thesis committee. This committee is responsible for conducting the project/thesis proposal examination, evaluating and grading the project/thesis proposal, providing constructive feedback throughout the project/thesis process, conducting the final project/thesis defense, and reading and evaluating the final project/thesis. Membership on this committee is:

- Major project/thesis advisor, *Chair*
- Co-advisor, if applicable
- Two members appointed by the Graduate Coordinator

A majority of the project/thesis committee must be compromised of current School of Computing faculty members, and at least two members of the committee must hold a terminal degree in a relevant computing discipline. The project/thesis committee is responsible for determining the acceptability of the project/thesis proposal and final defense. The committee's determination for both the proposal and final defense will be one of the following:

- Pass (with the possibility for minor changes, additions, corrections)
- Re-examination (with the possibility for re-examination after the student has made substantive improvements to the work)
- Failure (without the possibility for re-examination)

Practicum Portfolio Requirements

Include at least the following elements in your portfolio.[1]

1. Career Summary
2. Mission Statement
3. Brief Biography
4. Resume
5. Marketable Skills
6. Professional Accomplishments
7. Work Samples
8. Awards
9. Transcripts, degrees, licenses, security clearances and certifications
10. Professional Development
11. Volunteer Experience
12. Professional References and Testimonials

Project Proposal Requirements

The project proposal report is a summary of your proposed work including the context and background of the area of the project. The project proposal report should include at least the following information:

1. Abstract

2. Introduction/Motivation
    - Problem statement
    - Specific project goals/requirements
    - Motivation for and/or benefits of the project

3. Background/Context
    - Review of the appropriate literature
    - Summary of known similar implementations of the project

4. Proposed Project
    - Description of the proposed solution/approach
    - Delineation of major tasks/milestones
    - Description of the expected final deliverables
    - List of the software/hardware needed for completing this project and its evaluation[2]

5. Testing/Evaluation Plan
    - List of target results/outcomes based on project requirements
    - Description of the specific measure, target value, and testing plan that will be used to assess attainment for each target result
    - Description of the method of evaluating the success of the project

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[1] For additional information see https://www.indeed.com/career-advice/resumes-cover-letters/career-portfolio

[2] If any software/hardware is needed that is not already available in the School of the Computing, then provide a more extensive description of the needed resources and the proposed method of acquiring access to these resources along with applicable budget and funding methods. If any part of the project is dependent on resources being provided by a grant, cooperative agreement, or other third-party arrangement, then a risk-analysis and mitigation plan should be included that describes the impact to the research if these resources cannot be attained and an alternative approach that will be pursued.

6. Conclusion
    - Summary of the problem statement and project goals
    - Summary of the proposed solution and expected outcomes/deliverables

The outline given is a typical one and some variations in organization can be made but should be done in consultation with your major advisor.

Final Project Report Requirements

The final project report is a summary of the work completed on the project including the context and background of the area of the project. The final project report should include at least the following information:

1. Abstract

2. Introduction/Motivation
    - Problem statement
    - Specific project goals/requirements
    - Motivation for and/or benefits of the project

3. Background/Context
    - Review of the appropriate literature
    - Summary of known similar implementations of the project

4. Project Solution/Approach
    - Description of the project and its solution/approach
    - Delineation of major tasks/milestones completed
    - Description of the final deliverables

5. Testing/Evaluation Plan
    - List of target results/outcomes based on project requirements
    - Description of the specific measure, target value, and testing plan that will be used to assess attainment for each target result
    - Description of the method of evaluating the success of the project

6. Results
    - Description of the results obtained for each of the tests described in the prior section
    - Evaluation of the project and its level of attainment of the original goals/requirements
    - Explanation of any unexpected results

7. Conclusion
    - Summary of the problem statement and project goals
    - Summary of the final outcomes/deliverables
    - Summary of the project results
    - Suggested future work

The outline given is a typical one and some variations in organization can be made but should be done in consultation with your major advisor.

Thesis Proposal Requirements

The thesis proposal report is a summary of your proposed research including the current context and background of the research area. The thesis proposal report should include at least the following information:

1. Abstract

2. Introduction/Motivation
    - Problem statement
    - Motivation for and/or potential impact of the research

3. Background/Literature Survey
    - Review of the appropriate literature in the field
    - Explanations of technical processes or concepts not familiar to those outside of the narrow specialization of the research

4. Proposed Research and Methodology
    - Description of the proposed research
    - Description of the specific methodologies to be used
    - Evaluation of the efficacy, appropriateness, and known weaknesses of the proposed methodologies
    - List of the software/hardware needed for completing this project and its evaluation[3]

5. Expected Results and Evaluation
    - Description of the expected results
    - Description of the methods of testing and evaluation that will be used

6. Conclusion
    - Summary of the problem statement
    - Summary of the proposed research and methodology
    - Summary of the expected results
    - Suggest future work

The outline given is a typical one and some variations in organization can be made but should be done in consultation with your major advisor.

Thesis Requirements

The thesis is a summary of your research including the current context and background of the research area. The thesis should include at least the following information:

1. Abstract

2. Introduction/Motivation

[3] If any software/hardware is needed that is not already available in the School of the Computing, then provide a more extensive description of the needed resources and the proposed method of acquiring access to these resources along with applicable budget and funding methods. If any part of the project is dependent on resources being provided by a grant, cooperative agreement, or other third-party arrangement, then a risk-analysis and mitigation plan should be included that describes the impact to the research if these resources cannot be attained and an alternative approach that will be pursued.

    - Problem statement
    - Motivation for and/or potential impact of the research

3. Background/Literature Survey
    - Review of the appropriate literature in the field
    - Explanations of technical processes or concepts not familiar to those outside of the narrow specialization of the research

4. Research and Methodology
    - Description of the research
    - Description of the specific methodologies used
    - Evaluation of the efficacy, appropriateness, and known weaknesses of the methodologies used

5. Results and Evaluation
    - Description of the results
    - Evaluation of the results

6. Conclusion
    - Summary of the problem statement
    - Summary of the research and methodology
    - Summary of the results and evaluation
    - Suggested future work

The outline given is a typical one, and some variations in organization can be made, but should be done in consultation with your major advisor.

Academic Integrity

University policy[4] states that:

Students are expected to practice academic integrity. The penalties for dishonesty, including plagiarism, may include the following:

1. Receive a failing grade on the exam, assignment, or project.
2. Receive a failing grade in the class.
3. Resubmit the assignment with a reduced value for the completed work.
4. Complete a paper, project, or activity that improves the student's understanding of the value and nature of academic integrity.
5. Dismissal from the University.

The University keeps a centralized file of dishonesty reports in the Academic Administration office. After two reported incidents of academic dishonesty, the Associate Vice President will notify the dean or chair of the student's major. Two incidents also make a student eligible for dismissal from the University.

Within the School of Computing graduate programs, violations of academic integrity will be brought to faculty meeting. Using the University-specified penalties, the faculty will select the disciplinary action that is most appropriate to the details of each case. The School of Computing takes all violations of academic integrity very seriously.

[4] Quoted from the 2024-2025 Southern Adventist University Graduate Catalog