



CS 3201N – CS Thesis 1

Angie M. Ceniza-Canillo, PhD

Full Professor, Department of Computer, Information Sciences and Mathematics

School of Arts and Sciences

University of San Carlos

Course Detail

- Course No. and Title: CS 3201N/CS 4102 – CS Thesis 1
- Credit: 3 units
- Course Pre-requisite: 3rd year Standing
- Term: SY 2022 – 2023, 2nd Semester
- Room and Schedule: MW – 04:30PM – 06:00PM (LB466TC)

What is THESIS?

- A thesis project **builds and tests** the **skills** and the **knowledge** acquired during the education and is an essential part of the training towards becoming a professional.
- Content must be focused on the **concepts and theories of computing** and it should be in the form of scientific work that may be presented in a **public forum**.
- Software development projects / special problems

What is THESIS?

- Thesis is required for BSCS.
- It functions as **terminal project requirements** that would not only demonstrate a student's comprehensive knowledge of the area of study and research methods used.
- But, also allow them to apply the **concepts and methods** to a specific problem in their area of specialization.

What is THESIS?

- It may include:
 - A solution
 - An appropriate or partial solution
 - A scientific investigation, or
 - The development of results leading to the solution of the problem

What is THESIS?

- These **solutions, investigations, or results** must be anchored on Computer Science principles.
- A thesis that is heavily **software systems development** should clearly demonstrate a software development that is **algorithm-based** and founded on **Computer Science principles**.

Research in Computing

- Systematic method of problem solving
- Use of scientific method
 - Collecting data
 - Formulating a hypothesis or proposition
 - Testing the hypothesis
 - Interpreting results
 - Stating conclusions that can be later be evaluated independently by others.

Scope of Thesis

- The Thesis should integrate the **different courses, knowledge, and competencies** learned in the curriculum.
- Students are encourages to produce **innovative results, generate new knowledge or theories, or explore new frontiers** of knowledge or application areas.

Scope of Thesis

- Theses involving the development of the software systems should involve **algorithm-based research and development** founded on Computer Science principles. This should be reflected in the final report.
- The thesis **adviser should** determine the **appropriate complexity level** of the specific problem being addressed and the **proposed solution**, considering the **duration of the project**, and the **resources available**.

Suggested Areas

- Current Computer Science Topics
 - Software Development and Theory
 - Mobile Computing Systems
 - Software Extensions or Plug-ins
 - Expert Systems and Decision Support Systems
 - Systems Software (software tools/utilities, interpreters, simulators, compilers, security aspects)
 - Intelligent Systems
 - Game Development

Suggested Areas

- Current Computer Science Topics
 - Computer Vision
 - Image / Signal Processing
 - Natural Language Processing
 - Pattern Recognition and Data Mining
 - Bioinformatics
 - Graphics Applications
 - Cloud Computing
 - Parallel Computing
 - Embedded Systems
 - Emerging Technologies

Suggested Areas

- Foundations of Computer Science
 - Automata and Formal Languages
 - Data Structures and Algorithm Design and Analysis
 - Web Semantics
 - Coding Theory
 - Programming Languages
 - Visualization Systems
 - Computer and Architecture
 - Modelling and Simulation

Suggested Areas

Human Computer Interaction

- Usability
- Affective Computing
- Emphatic Computing

Others Areas

Suggested Themes

- The following are Research Themes or Agenda of University of San Carlos:
 - Food
 - Health
 - Water
 - Waste
 - Energy
 - Disaster and Risk Management
 - Governance
 - Education
 - Business
 - Human Resource

How can Computer Science student/s be able to contribute to these agenda?

Thesis Duration

- Students are given ample time to finish their thesis.
- Students will enrol two semesters to complete their thesis
 - CS 3201N CS Thesis 1 (3 units)
 - CS 4101 CS Thesis 2 (3 units)
- A professor is assign to handle the course and coordinate with Students and Advisers.

Composition of Thesis Group

- Students should preferably work in teams of **two (2) members** depending on the complexity of the project.
- The adviser should be able to determine whether the team can complete the project on time.
- Multidisciplinary teams are also encouraged, provided that team members prepare separate documentations per program

Panel Composition

- The Project is prepared under the guidance of an adviser and presented and accepted by a Panel composed of at least 3 members: Chair of the Panel and 2 members of the Panel.
- **Chair**
 - policy same as Adviser's qualification, preferably domain expert
- **Panel Member 1**
 - Faculty Member with undergraduate or graduate degree ; Full time or Part time Faculty)
- **Panel Member 2**
 - Faculty Member with Industry Experience or Someone from the Industry

Adviser and Panel Qualification

- The adviser must have at least a **Master's Degree**.
- The adviser must have completed a computing project successfully beyond bachelor's degree project or must have experienced and completed a Thesis.
- An adviser must have an experience in:
 - design and create algorithmically software
 - develop new and effective algorithms for solving computing problems.
 - design and develop computing solutions using a system-level perspective
- As much as possible, the adviser should be a full-time faculty member of the HEI. Otherwise a full-time faculty co-adviser is required.

Adviser and Panel Qualification

- Advisers and Panel Members should have a degree in a Computing or Allied programs, or must be a domain experts in the area of study.
- At least one of the panel members must have a master's degree in Computing (preferably in the same field as the thesis or project) or allied program.

Adviser Role

- Must guide the advisee to conceptualize the Research Topic.
- Must be involved in the accomplishment of completion of (Chapter 1-4 of Proposal Document) and (Chapter 1-6 of Final Document).
- Must be able to guide the students throughout the whole project life cycle, including the thesis defense and possible project deployment.

Adviser Role

- Must guide their advisees to secure the following (if applicable)
 - Ethics Clearance Form
 - Consent Forms
- Guide Student's work to publish (Conference Proceedings or Journal)
- Publication document should be reviewed and approved by adviser before submission.

Presentation of the Thesis and Publication

- There is an annual culminating event held at the end of the School Year: Best Thesis Awarding Ceremony with Panel Members from the Industry.
- Thesis must be presented in a public forum.
- This forum may be an international, national, regional or school-based conference, meeting, or seminar that is announced and open to interested parties.
- A separate from the presentation before the Panel.

Publication Output

Publication Output is a requirement:

1. If accepted in scopus or ISI indexed Journal, F.G. is **1.0** and **without Oral Defense**.
2. If at least 1 reviewer in scopus or ISI indexed Journal accepts, highest possible F.G. is **1.3** and **with Oral Defense**.
3. If accepted in refereed journal (but not scopus index) F.G. is **1.3** and **without Oral Defense**.
4. If accepted in Conference proceeding, F.G. is **1.0** and **without Oral Defense**.

Publication Output

5. If accepted for poster presentation,

- highest possible F.G. is 1.3 and with Oral Defense or ;
- highest possible F.G. is 1.8 without Oral Defense

6. if accepted in a CHED accredited journal, highest possible F.G. is 1.3 without Oral Defense

7 . if not accepted to any Journal or Conference (at least 2) , Oral Defense and Deliverable rating based on the panelists

USC BPI nominee will get another incentive (eg minus .1 or .2 of the grade)

Criteria for Best Thesis

- Relevance to the Theme – 25%
- Originality – 30%
- Publication – 20%
- Impact to Community (CES) – 25%

Course Output

- Meetings with Thesis Adviser
- Team Work
- Progress Report
- Thesis Proposal Oral Defense
- Thesis Proposal Document

Course Content

- Research topic identification
- Elements of Research
- Writing a Research Proposal
- Proposal Hearing

Thesis Grading System

Outputs	Type	Weight
50% Requirements/Deliverables		
Meeting with Thesis Adviser (Rubric 1)	Rubric-Based	10%
Teamwork (Rubric 2-1, 2-2)		10%
Progress report (Rubric 3)		30%
40% Thesis Proposal Defense Rating		40%
Oral Examination (50%) (Rubric 4)		
Document (50%) (Rubric 5)		
10% Approved Thesis Proposal Document		10%
Total		100%

Thesis Learning Activities

- The subject will require the students to come up with the following:
 - Deliverables
 - The students will be asked to submit milestones on their research work. These deliverables are chapters that make up a research proposal.
 - Approved Research Proposal
 - An integrated and comprehensive research proposal must be presented and defended to a research committee in order to assess the work of the students.

Thesis Verdict

- **PASSED**
 - Minor revisions are necessary to enhance the document proposal, but they do not have to be presented in front of the panelists instead to his/her thesis adviser. The panelists are tasked to make sure that all the revisions are made.
- **RE DEFENSE**
 - Another formal thesis proposal is necessary because the proponents failed to present his/her thesis proposal project properly and/or the documentation is not properly stated.
- **FAILED**
 - The thesis proposal is not feasible as a thesis proposal. The verdict is a unanimous decision among the three members of the thesis defense panel. Once issued, it is final and irrevocable.

Thesis Document

- TITLE
- ABSTRACT
- INTRODUCTION (CHAPTER 1)
 - Rationale
 - Statement of the Problem
 - General Objective
 - Specific Objectives
 - Significance of the Study
 - Scope and Limitation
- REVIEW OF RELATED LITERATURE (CHAPTER 2)
- TECHNICAL BACKGROUND (CHAPTER 3)
- DESIGN AND METHODOLOGY (CHAPTER 4)
- DISCUSSION OF RESULT (CHAPTER 5)
- SUMMARY, CONCLUSION & RECOMMENDATION (CHAPTER 6)

Thesis Proposal

- TITLE
- ABSTRACT
- INTRODUCTION (CHAPTER 1)
 - Rationale
 - Statement of the Problem
 - General Objective
 - Specific Objectives
 - Significance of the Study
 - Scope and Limitation
- REVIEW OF RELATED LITERATURE (CHAPTER 2)
- TECHNICAL BACKGROUND (CHAPTER 3)
- DESIGN AND METHODOLOGY (CHAPTER 4)
- DISCUSSION OF RESULT (CHAPTER 5)
- SUMMARY, CONCLUSION & RECOMMENDATION (CHAPTER 6)

Thank you for listening. 😊