**GUIDELINES**

**UNDERGRADUATE THESIS/ CAPSTONE PROJECTS**

**FOR COMPUTING PROGRAMS**

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**ARTICLE I**

**INTRODUCTION**

**Section 1 Rationale and Background**

The Commission on Higher Education has approved programs for Computer Science / Information Technology and Information Systems. These shall henceforth be referred to as Computing Programs. This shall also include any programs that may be endorsed by the Technical Panel for Information Technology Education (TPITE), and subsequently approved by CHED.

The Thesis/ Capstone Project are required for candidates for graduation in all Computing Programs. Both the Thesis and Capstone projects are 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

in their area of specialization.

BS Information Technology students must complete a project in the form of a business application development, or an Information Systems plan.

BS Information Technology students must complete a capstone project in the form of an IT application, a Multimedia Systems Development or an IT Management Project.

It is expressly understood that Computing Thesis and Capstone Projects need not require surveys, statistics, and descriptive method unless appropriate.

HEIs are required to include thesis and capstone projects in their curricula. The Policies and Standard for Undergraduate Thesis intends to serve as a guide for administrators, faculty and students alike determining what are allowable standards or capstone projects in the context of undergraduate students in computing.

**ARTICLE II**

**THESIS/CAPSTONE PROJECTS SPECIFICATION**

**Section 2 Definitions**

2.1 A **Thesis** is a technical report on a systematic investigation of a problem that can be solved using Computing. It may include a solution, an approximate or partial solution, a scientific investigation, or the development of results leading to the solutions of the problem.

2.1.1. A Computer Science Thesis must be anchored on Computer Science principles.

2.2 A **Capstone Project** is an undertaking appropriate to a professional field. It should significantly address an existing problem or need.

2.2.1 An Information Technology Capstone Project focusses on the infrastructure, application or processes involved in introducing a Computing solution to a problem.

**Section 3 Scope of the Thesis/Capstone Projects**

The Thesis or Capstone Project should integrate the different course, knowledge, and competencies learned in the curriculum. Students are encouraged to produce innovative results, generate new knowledge or theories, or explore frontiers of knowledge or applications areas.

For Information Systems Capstone Projects changes in process and information flow and/or information policies with the introduction of the system should be clearly specified in the final report.

The Thesis/Capstone Project Adviser should determine the appropriate complexity level of the specified problem being addressed and the proposed solution, considering the duration of the project, the composition of the team and the resource available.

**Section 4 Suggested Areas for Thesis/Capstone Projects**

Following is a list of some suggested areas per program. The specific areas identified for each degree program may also considered for the other computing degree programs, depending on the scope, limitations, and approach and following the principles stated in preceding sections.

**4.1 Information Technology**

4.1.1 Software Development

* Software customization
* Information Systems Development for an actual client (with pilot testing)
* Web Applications Development (with at least alpha testing on live servers)
* Mobile computing Systems

4.1.2 Multimedia Systems

* Game Development
* E-learning Systems
* Interactive Systems
* Information Kiosks

4.1.3 Network Design and Implementation and Server Farm Configuration and Management.

4.1.4 IT Management

* IT Strategic Plan for sufficiently complex enterprises
* IT Security Analysis, Planning and Implementation

**Section 5 Thesis Project Duration**

Students should be given ample time to finish their project. Two (2) to three (3) terms or semesters should be prescribed in the curriculum for BS Computer Science students to complete their theses and one (1) to three (3) terms or semesters for BS Information Technology and BS in Information Systems students to complete their Capstone Project.

The maximum number of units that may be required for Thesis or Capstone Projects is nine (9) units.

Grading systems and possible Honoria rates for thesis/capstone project are left to the discretion of the HEI provided that such policies are not grossly disadvantageous to the students, and provided further that such policies are documented and approved by the proper HEI authority.

**Section 6 Composition of Thesis/Projects Groups**

Students should preferable work in teams of two (2) to four (4) members depending on the complexity of the project. The adviser should be able to determine whether the teams complete the project on time.

Multidisciplinary teams are also encouraged, provided that team members prepare separate documentations per program.

**Section 7 Adviser/Panel Composition**

7.1 Panel Composition

The project is prepared under the guidance of an adviser and presented and accepted by the panel composed of at least 3 members that includes the adviser.

7.2 Adviser/Panel Qualifications

The adviser must have completed a computing project successfully beyond bachelor’s degree project. As much as possible, adviser should be a full-time faculty member of HEI. Otherwise a fulltime faculty co-adviser is required.

Advisers and Panel Members should have degree in in a Computing or allied programs, or must be domain experts in the area of the study. At least one of the panel members must have a master’s degree in Computing (preferably in the same field as the project or project) or allied programs. For IT and IS, At least one of the panel members should preferably have industry experience.

The adviser must be able to guide the students throughout the whole project life cycle, including the thesis/capstone project defense and possible project deployment.

Faculty advisers should preferably handle at most five projects at one time, and in no case, should exceed ten (10) projects. Panel member should preferably be limited to at most ten (10) projects and in no case should this exceed twenty project in one semesters, counting all projects in all HEIs.

In the case of the participation of an external client, then the organization for which the project is intended should be represented as much as possible.

Section 8 **Presentation of the Thesis or Capstone Projects**

Thesis and Capstone Project 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. This may be separate from the presentation the panel mentioned in section 6. A school-based colloquium organized for this purpose would suffice to satisfy this requirement. Presentation in a public forum, such as the National Conference on IT Education (NCITE) of PSITE, is encouraged.

**ARTICLE III**

**THE THESIS/ PROJECT FORMAT**

Section 9 **Suggested Documentation Template/Format**

Upon completion of the Thesis or Capstone Project, the students shall be required to submit copies of documentation of their work by team. This may be in the form of a research report in journal article format such as ACM or IEEE format, a bound technical report, or comprehensive electronic documentation. The format is left to the discretion of the HEI.

9.1 Computer Science Thesis

9.1.1 Sample outline for Thesis involving foundations of Computer Science

Title page

Abstract

Table Contents

List of Figures, List of Tables, List of Notations

Introduction

* Background of the problem
* Statement of the problem
* Objectives
* Significance

Scope and Limitations

Related Literature

Theoretical Background

* Include comprehensive discussion on theorems, definitions, fundamental algorithms, mathematical models/formula

Proposed Solution to the Problem

Results and Discussion, includes theoretical proof, verification or evidence

Conclusions and Recommendations

Appendices may include the following

* Relevant Source Code where applicable
* Source Data, Where applicable
* One-page Curriculum Vitae per Team member

9.1.2 Sample Outline for Thesis Involving Software Development

Title Page

Abstract or Executive Summary

Table of Contents

List of Figures, List of Tables, List of Notations

Introduction

* Project Context
* Purpose and Description
* Objectives
* Scope and Limitations

Related Literature

Technical Background

* Include in-depth discussion on relevant technical aspects of the project

Design and methodology

* Include discussion on conceptual design/system architecture/Block diagram and algorithms

Results and Discussion

Conclusion and Recommendation

Appendices may include the following:

* Relevant Source Code
* Evaluation Tool or Test Documents
* Sample input/output reports
* Users Guide
* One-page Curriculum Vitae per Team member

9.1.3 ACM Journal Article Format

9.2 **Information Technology and Information Systems Capstone Projects**

9.2.1 Sample Outline for IS plans

The IS Plan may follow any of the establish frameworks, such as that of the National Computer Center.

9.2.2 Sample Outline for Capstone Projects

Title Page

Executive Summary

Table of Contents

List of Figures, List of Tables, List of Notations

Introduction

* + Project Context
  + Purpose and Description
  + Objectives
  + Scope and Limitations

Review of Related Literature/Systems

Technical Background

Methodology, Results, Discussion

* + Requirements Analysis
  + Requirements and Documentation
  + Design of Software, Systems, Products, and/or Processes
  + Development and Testing, where applicable
  + Description of the Prototype, where applicable
  + Implementation Plan (Infrastructure/Deployment) where needed
  + Implementations Results, where applicable

Recommendations

Appendices may include the following

* Relevant Source Code
* Evaluation Tool or Test Documents
* Sample Input/Output/Reports
* Users Guide
* Process/Data/Information Flow
* Screen Layouts
* Test Results
* Sample Generated Outputs
* Picture showcasing the data gathering Investigation done
* One-page Curriculum Vitae per team member

**ARTICLE IV**

**INTELLECTUAL PROPERTY RIGHTS**

**Section 10 Intellectual Property (IP) Rights**

All Thesis and Projects must not infringe on existing IP. All prior works, including

open source, open content and creative commons content, shall be properly cited.

Copyright and other intellectual Property Rights arising from the Thesis or

Capstone Project shall be bound by the IP Policies of the EI, provided that any

such policies shall not be grossly disadvantage to the creators of IP.