



**UNIVERSITY OF SAN CARLOS**

**COLLEGE OF ARTS AND SCIENCES**

**DEPARTMENT OF COMPUTER SCIENCE**

**Final Capstone Document Format**

This final capstone document format aims to guide the research students of the Department of Computer Science in writing research paper. Comments and suggestions are continually welcome for the improvement of the research program.

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**A.Y. 2013 – 2014**

Revised by: Mary Jane Sabellano

**A.Y. 2014 - 2015**

**CAPSTONE DOCUMENT FORMAT GUIDELINES**

* + **Chapter 1 – 3.** Is rewritten in present or past tense voice with revisions made.
  + **Chapter 4 – 6.** Is written after the capstone development is completed.
  + **Paper and Font.** Use 8.5 X 11. Use one side of the page only. Use Arial for font style and font size 12-point.
  + **Margins.** Left 1.5 inches; top, bottom, and right, 1 inch.
  + **Spacing.** Use 1.5 spacing for the text. Use single space for table and figure captions.
  + **Figures and Illustrations.** Figures, tables, graphs, etc., should be positioned and labeled appropriately. Figure # should be placed bottom center of the figure. Table # should be placed upper left of the table
  + **Title Page.** No page number but counted as page i
  + **Approval Sheet.** No page number but counted as page ii
  + **Acknowledgement.** Counted as page iii. Page number shown
  + **Abstract.** Counted as page iv. Page number shown
  + **Table of Contents.** Counted as page v. Page number shown
  + **List of Figures.** Counted as page vi. Page number shown
  + **List of Tables.** Counted as page vii. Page number shown
  + **Chapter 1.** Begin page number at 1, page number is shown and onwards

White Short Bond Paper (8.5” X 11”)

1”

1”

1”

1.5”

**ORAL EXAMINATION/DEFENSE GUIDELINES**

A capstone proponent is eligible for **ORAL EXAMINATION/DEFENSE** only if

1. Thesis adviser recommends the thesis by signing the **SWORN STATEMENT AND RECOMMENDATION** Form;
2. Three copies of the capstone document must be submitted to your CAPSTONE COURSE INSTRUCTOR on **February 17, 2015**.
3. The three possible verdicts after the defense are:

**ACCEPT WITH REVISIONS**. Minor revisions are necessary to enhance the document and/or software, but they do not have to be presented in front of the panelists. The panelists are tasked to make sure that all the revisions are made.

**REDEFENSE**. Another formal defense is necessary because the proponent failed to present his/her thesis properly and/or the documentation and/or software contain major errors.

**NOT ACCEPTED**. Either the objectives of the study have not been met or the proponent cheated. The verdict is a unanimous decision among the three members of the thesis defense panel. Once issued, it is final and irrevocable.

It is encouraged that the students schedule their defenses earlier, this is to give the students more time to revise the final thesis for verdicts of ‘ACCEPT WITH REVISIONS’ or ‘REDEFENSE’. It also allows the student to improve or redo their final thesis in cases of ‘NOT ACCEPTED’.

1. After revisions are made, process **CAPSTONE PROJECT COMPLIANCE FORM**
2. Present to your CAPSTONE COURSE ADVISER the **APPROVED CAPSTONE DOCUMENT** with three (3) original copies of the **APPROVAL SHEET** and **CAPSTONE PROJECT COMPLIANCE FORM** for PRINTING APPROVAL

**HARDBOUND COPY GUIDELINES**

You are expected to secure a PRINTING APPROVAL from your CAPSTONE COURSE INSTRUCTOR **before submitting 3 BOUND copies of FINAL CAPSTONE DOCUMENT**.

1. Please refer to **HARDBOUND COVER PAGE** and **HARDBOUND SIDE LAYOUT** Guidelines.
2. HARDBOUND COLOR: MAROON
3. Submit **three (3)** HARDBOUND COPIES to your CAPSTONE COURSE INSTRUCTOR
4. Make a video documentation of your Capstone Project with the following content:
   * Introduction of the Developers
   * Title of the Capstone Project
   * Purpose of the Project
   * Features of the Capstone Project
5. Compile all necessary files in a CD such as: PDF format of Capstone Document, Video Documentation and Project files (softwares, database, system project files and etc.)
6. Provide one CD for each Hardbound Copy enclosed neatly in a white envelope CD case. Attach it to the last page of the Hardbound copy. See illustration CD CASE ATTACHMENT AREA.

**<PROJECT TITLE HERE>**

**HARDBOUND COPY FRONT COVER LAYOUT and SAME FOR THE FIRST PAGE COVER**

A Capstone Project

Presented to

the Faculty of the Department of Computer Science

University of San Carlos

In Partial Fulfillment

of the Requirements for the Degree of

Bachelor of Science in Information and Communications Technology

By

<Researcher’s name here>

<Researcher’s name here>

<Adviser’s name here>

Faculty Adviser

<Date Here>

**HARDBOUND COPY SIDE LAYOUT**



**CD CASE (WHITE ENVELOPE) ATTACHMENT AREA**

|  |  |  |
| --- | --- | --- |
| **HARDBOUND COPY FRONT COVER (INSIDE VIEW)** | **DOCUMENT PAGES** | **HARDBOUND COPY BACK COVER**  **(INSIDE VIEW)** |

**APPROVAL SHEET**

This thesis entitled, **“AUTOMATIC BLOCK SCHEDULING AND COURSE-FACULTY TIMETABLING”** prepared and submitted by **EDWARD CULLEN AND BELLA SWAN**  in partial fulfillment for the degree of **BACHELOR OF SCIENCE** **IN INFORMATION TECHNOLOGY**, has been examined and is recommended for acceptance and approval for ORAL EXAMINATION.

**THESIS COMMITTEE**

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Adviser

STEPHANIE POLINAR, MS VINCENT RACAZA

Member Member (Accenture)

GLENN PEPITO, MS

Committee Chair

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**PANEL OF EXAMINERS**

Approved by the Committee on Oral Examination with a grade of **PASSED.**

GLENN PEPITO, MS

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Accepted and approved in partial fulfillment of the requirements for the degree **BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY.**

MARY JANE SABELLANO, MS

Chair, Department of Computer Science

February 21, 2015

Date of Oral Examination

Acknowledgement

This section of the thesis document may be written in first-person voice. One has to use one’s own words in writing an acknowledgement. This section is an expression of thanks to those who contributed to the completion of the thesis.

**Abstract**

This section of the thesis document must provide a concise summary of the final thesis. The abstract must be from 150 to 200 words of short, direct and complete sentences. Do not put citations or quotes in this section. The abstract structure consists of the following:

(1) Background/ setting the scene (one or two sentences)

Single space

Present tenses

(2) The focus and innovation (one or two sentences)

(3) The problem (one or two sentences)

Past tenses

(4) The method (one or two sentences) 🡪

(5) The results or what you have accomplished (one or two sentences)🡪 Present Tense

**Example Abstract**

The field of educational timetabling problem is commonly encountered in many universities throughout the world. The scheduling of courses to proper rooms and available timeslots and assigning course to faculty with certain constraints is an important administrative task that has to be performed in an individual department every semester.

For some departments in several universities with many student populations, a block scheduling is arranged. The goal is to help students choose correct combination of course schedules, to have a faster enrollment process and to logically group students into blocks or sections.

This study has proposed a simultaneous processing of block scheduling and course-faculty timetabling algorithm that operates in a general level whose constraints were gathered from Computer Science, Languages and Literature and Psychology Department of the University of San Carlos. The experimental results show a very satisfactory performance of the timetabling algorithm.

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SAMPLE ONLY!

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# CHAPTER 1

## INTRODUCTION

<Short overview of the chapter here, one paragraph.>

### Background of the Project

<This part here contains the following in indented paragraph form:

Company Background,

Company's Current State in terms of Technology

Company's need/ challenges that needs Technological Intervention

Brief Introduction of the Project as the Solution>

### Project Objectives

#### General Objectives

This section states the over-all goal that must be achieved to answer the problem. (The Title of the Capstone Project should be included here)

#### Specific Objectives

This subsection is an elaboration of the general objective. It states the specific steps that must be undertaken to accomplish the general objective. These objectives must be (SMART) Specific, Measurable, Attainable, Realistic, Time-bounded. Each specific objective may start with “to evelop/create/design/survey/review/analyze/evaluate/test/implement…”

### Significance of the Project

This section explains why the Project must be done. It rationalizes the objective of the project with that of the stated problem. Include the benefit/ importance of the project to various stakeholders (individual/ group of individual/ institutions that are directly benefiting from the project). Put more emphasis on the innovation that were contributed to the Information and Communication Technology field.

### Scope and Limitations of the Project

This section discusses the boundaries (with respect to the objectives) of the project and the constraints within which the project will be developed.

# CHAPTER 2

## REVIEW OF RELATED WORKS AND STUDIES

<Short overview of the chapter here, one paragraph>

This section discusses the features, capabilities, and limitations of existing project/ worlks/ studies/ research. Technology, Framework and Tools that are essential in the course of the Project should be included. Journals, Thesis, algorithm and software that are related to the Project are also reviewed.

REMINDER!

FOLLOW APA FORMAT FOR THE CITATIONS AT LEAST 10 REFERENCES

# CHAPTER 3

## PROJECT METHODOLOGY

<Short overview of the chapter here, one paragraph>

This section describes the software development model used (e.g. agile development, SCRUM, etc.). Provide a diagram of the software development model used with discussion on what and how to accomplish each phase of the software development process.

This section also provides discussions of the specific steps and activities that will be performed by the proponent to accomplish the project. The discussion covers the activities from Data Gathering to Implementation and Project Presentation. This section also includes an initial discussion on the theoretical framework to be followed. Examples of activities include inquiry, survey, research, brainstorming, canvassing, consultation, Project Guidelines and Policies review, interview, observation, experiment, design, test, document, etc. (A Software Engineering Paradigm/ Model should be used as a guideline) . The methodology also includes the following information:

* who is responsible for the task
* the resource person to be contacted
* what will be done
* when and how long will the activity be done
* where will it be done
* why should the activity be done

\*\*\*Studying a particular programming language or development tool (e.g., to study Windows/Object- Oriented/Graphics/C++/PHP/ASP/C# etc.) to accomplish the general objective is inherent in all Project and, therefore, must not be included here. \*\*\***CHAPTER 4**

## <System Name Software Development>

## Note: Rename the underlined words to the name of the system

<Short overview of the chapter here, one paragraph>

**4.1 Requirement Specification**

**4.1.1. Business Process Flow**

**4.1.2. System Process Flow**

**4.1.3. System Interfaces**

**4.1.4. User Interfaces**

**4.1.5. Hardware Interfaces**

**4.1.6. Software Interfaces**

**4.1.7. Communication Interfaces**

**4.1.8. User Characteristics**

**4.1.9. Specific Requirements (in tabular form)** - <refer to a separate sheet>

**4.1.9.1. Functional Requirements**

**4.1.9.2. Performance Requirements**

**4.1.9.3. Software Systems Attributes (Reliability, Availability,**

**Security, Main1tainability, Portability)** if applicable

**4.2. Design Specification**

**Component Diagram (a UML diagram)**

**High-level Use Case(a UML diagram) –**

**ERD**

* 1. **Testing and Evaluation**

**Test Specification and Results (black box testing only) -** No analysis (Developers/Technical Users) - Results should be in tabulated format

# CHAPTER 5

## RESULTS AND ANALYSIS

<Short overview of the chapter here, one paragraph>

<This chapter contains tables and graphs and discussion based on the results and after analysis after the User Acceptance Test (Clients/End-Users) testing only.>

# CHAPTER 6

## CONCLUSION AND RECOMMENDATION

<Short overview of the chapter here, one paragraph>

**Conclusions**

Verify each with the Objectives. Mention analysis of the results of testing (development & UAT)

**Recommendations**

Write all offsets found in the developed system as your recommendations for the succeeding researchers. (e.g. system’s limitations and other possible areas for improvements)

# DEFINITION OF TERMS

SAMPLE ONLY!

This section of the thesis document provides operational definitions of key terms that appear in your title and statement of the problem and sub-problems (terms are arranged alphabetically) as used in your study.

(Sample DEFINITION OF TERMS)

**Block Section** is a grouping with arrangement of schedules of courses intended for a group of students. Example Block A has the same set of courses to be taken but of different schedules compared to Block B.

**Block Scheduling** is the process of organizing a certain number of schedules of classes that would be enrolled by students on a first-come first served basis for all year levels per curricular program that conforms to required courses stated in the prospectus.

**Capabilities** refer to the power or ability to generate an outcome. The ability or characteristic associated with desirable performance on a job.

**Constraints** are the conditions that a solution to an optimization problem must satisfy. It is divided into two types:

**Hard Constraints** have to be satisfied under any circumstances.

**Soft Constraints** need to be satisfied as much as possible. Due to the complexity of the real-world timetabling problem, the soft constraints may need to be relaxed since it is not usually possible to generate solutions without violating some of them.

# REFERENCES

This section includes only sources that were used or cited in the research work. At least containing 20-30 author citations for undergraduate thesis. Categorized references according to the following order:

Books

Journals

Unpublished Materials

Internet

Documents

Reference entries shall be sorted alphabetically by author’s names, and book title. The style of reference entries shall conform to **American Psychological Association (APA)** Format.

<Refer to the separate files for sample format >

# APPENDICES

# (separate page as cover page)

Some writers are prone to append peripheral documents of various kinds to their proposals. Plural (appendices) singular (appendix).

**Appendix A** <contains Letters/Forms> (separate page as cover page with the list of the contents for Appendix A)

**Appendix B** <contains questionnaires> (separate page as cover page with the list of the contents for Appendix B)

**Appendix C** <Gantt Chart> (separate page as cover page with the list of the contents for Appendix C)

**Appendix D** <Budget Summary> (separate page as cover page with the list of the contents for Appendix D)

**Appendix E** <contains Letters/Forms> (separate page as cover page with the list of the contents for Appendix E)

**Appendix F** <CV> (separate page as cover page with the list of the contents for Appendix F)

**Example for each page:**

**Appendix A**

Letters/Forms

1. Letter of request for an interview
2. Transcript of Interview
3. Agreement Form
4. etc.

….and the succeeding pages would be the actual documents attached to each appendix.

# USER’S MANUAL

**Operational Manual**

## Technical

<consists of Installation and Configuration Software and Hardware Requirements >

## User (Admin/Clients)

<consists of a step by step instruction on how to use the system including screenshots with explanation>

**CURRICULUM VITAE**

***< Resume format strictly in word document, Times New Roman font size 12 >***

**CONTACT INFORMATION**

Recent

Photograph

**(*mandatory*)**

1. Full Name
2. Current Address
3. Telephone number – Office & Cell/Mobile
4. Email address – Office & Personal/Private

**PERSONAL INFORMATION**

1. Date of Birth
2. Age
3. Citizenship/Nationality
4. Gender
5. Marital Status (Single / Married / Divorce)
6. Number of Children & Age
7. Language proficiency (*state verbal and/or written*)
8. Computer PMS and Software skills

**EDUCATIONAL BACKGROUND (*state year achieved*)**

1. Education Level

*Year*

*School*

*Secondary*

*Year*

*School*

*Elementary*

1. Certifications & Accreditations

*Example:*

*2012-2013*

*Sangguniang Kabataan Council*

**STRENGTHS/TRAITS & SKILLS (*see below examples*)**

1. *High degree of initiative*
2. *Hand-on experience*
3. *Strong presentation skills*
4. *Good interpersonal skills*
5. *Able to work within tight schedules*

**Technical Skills** *(write here if there are any from present backward)*

**Work Experience** *(write here if there are any from present backward)*

**Trainings** *(write here if there are any from present backward)*

**CAREER OBJECTIVES**

Example: *Further developed career path within distinguished international chain hotels & resorts.*

**References**

1. Name

Position

Name of Organization (include city & country location)

Contact Number

1. Name

Position

Name of Organization (include city & country location)

Contact Number

1. Name

Position

Name of Organization (include city & country location)

Contact Number

*Please add-on if you have more references*

**Resume updated on dd/mm/yy**