CAPSTONE PROJECT and RESEARCH MANUAL

Guidelines and Policies

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*This document contains the guidelines and policies for the Capstone Project and Research 1 and 2. These were formulated with the objective of helping the students of the **Information Technology Department of Cebu Technological University - Argao Campus** to deliver quality and industry-aligned relevant capstone projects.*

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Introduction

The undergraduate Capstone Project and Research 1(Technopreneurship) and Capstone Project and Research 2 are graduation project requirements that would demonstrate a student's comprehensive learning and also allows them to apply the concepts, principles, and methods to a specific problem in their area of specialization.

In line with these, the BSIT Capstone Projects and Research 1 and 2 are designed to enable the students to use concepts, principles and techniques learned in IT courses to identify a relevant real-world problem and develop the means to address it. They should have taken the required subjects like Computer programming 1 and 2, Information Management, Multimedia, Networking, Object-Oriented Programming and Web Systems and Technologies before they can enroll in this subject.

It has the goal of adequately preparing students, gearing them for their respective careers or professions by involving them in a group project for a total of two semesters. The subjects are put in place with the following specific objectives:
   a. Subject the students to a self-directed learning environment;
   b. Provide students with a venue to skillfully integrate and apply the various skills, methods, and theories learned and acquired in the program;
   c. Provide comprehensive guidance to the students in selecting their projects and walk them through understanding the research process;

   d. Introduce the tools needed to support implementing the system and writing its proposal then carry it to completion within a set timeframe thus adhering to a professional standard;
   e. Provide reinforcement to develop competencies that have not been sufficiently emphasized in other fundamental subjects;
   f. Bridge the gap between undergraduate studies and professional future;
   g. Develop communication skills to effectively communicate within the computing community and with society at large thus refining the student's oral and written communication skills; and
   h. Recognize the need for and engage in planning self-learning and improving performance as a foundation for continuing professional development.

Recommended Areas for BSIT Capstone Project and Research 1 and 2

IT capstone projects are generally classified as applied research projects that are feasible and can be finished within two semesters. Applied research can be classified as Experimental, Commissioned, or Application-Based.

Startup Projects

It talks about the development of prototype software systems. The product to be developed may already exist, however, terms of the analysis, design and implementation, the students conduct the analysis by themselves, prepare a design of their own (perhaps patterned after an existing design), and write a substantial portion (not necessarily all) of its source code.

Experimental Software

The use of relevant software libraries is allowed provided that there are sufficient design and implementation problems that remain to be solved or addressed. These projects may also attempt to demonstrate that a certain theory/algorithm/design might work. In general, the output of this type of capstone projects are by nature experimental and/or exploratory, and are considered at an initial stage of development, which will require further investigation or development to mature into usable technologies.

Commissioned Software

This involves the development of application programs or systems tailored to fit the needs of a specific institution and it may be funded and/or used by them. Such capstone projects may be extensions of the students' practicum projects and can be classified as externally-funded projects (i.e. supported by a company or an individual who may or may not be from outside of the College). However, the members of the capstone project groups must ensure that the support goes all the way until the completion of the project. Failure of the funding party to support the capstone project throughout the entire duration of the capstone project will not be accepted as an excuse for the non-completion of the capstone project. Any capstone project group who wishes to work on this type of capstone project should inform the Capstone Project Subject Adviser/Coordinator before making any agreement with the company or any individual to resolve issues like ownership of the capstone project, confidentiality agreement, and terms of agreement.

Application-Based Project

This type of capstone project is similar to that of commissioned software wherein the development of application programs is tailored to fit the needs of a specific organization, industry, or government and that it may be paid for and/or used by them.

However, the emphasis on this type of capstone project is on the Information Technology processes and methodologies.

Project Sample Categories

The proposed capstone project may fall in any of the following categories but are not limited to:

Software Development

- Software Customization
- Information Systems Development for an actual client (with pilot testing)
- Web Applications Development
- Mobile Computing Systems

Multimedia Systems

- Game development
- E-learning systems
- Interactive systems
- Information kiosks
- IT Management

Phases of Capstone Project

The entire capstone projects journey officially starts with the capstone project pre-proposal, proposal stage, the submission of an approved capstone project document (beginning in Capstone Project and Research 1) and development, implementation and deployment of an IT Project (in Capstone Project and Research 2.) At the end of each stage, each capstone project group must submit specific deliverables for evaluation and acceptance by the capstone project adviser, forwarded and monitored by the subject teacher and reviewed with approval from the capstone project panel committee.

For all the stages of the capstone project, the criteria used when deliberating the defense verdict include:
- ❑ complete and acceptable deliverables;
- ❑ a well-prepared and delivered presentation; and
- ❑ a productive Question and Answer session.

The Capstone Project and Research 1 shall have the following phases:

Pre-Proposal Stage
- ✓ Course Enrolment
- ✓ Capstone Project Orientation
- ✓ Short Listing of Possible Projects
- ✓ Scouting for Project Adviser
- ✓ Title Critiquing
- ✓ Pre-Proposal Statement Preparation/Title Hearing
- ✓ Title Approval

Proposal Stage
- ✓ Writing of Chapter I
- ✓ Proposal Hearing

The Capstone Project and Research 2 shall have the following phase:

Final Oral Defense Stage
- ✓ Development and Implementation
- ✓ Writing of Chapter 2 and 3
- ✓ Deployment
- ✓ Testing
- ✓ Final Oral Defense Proper
- ✓ Individual Skills Test(optional)

Grouping and Regrouping

Each Capstone Project Group must consist of three (3) or four (4) members who will be assigned to one of the following roles respectively:

Hustler - Project Manager
The Hustler optimizes marketing strategies in promoting the product or output.

Hacker - System Analyst, Software Engineer, Software Tester
The hackers will be the ones to build/develop the system or application.

Hipster - UX Designer, Technical Writer
The hipster is in charge of making sure that there is a logical connection between the design and user requirements.

Regrouping is allowed if less than three (3) members of the group remain. If the group may be disbanded, members of this affected group may join other groups. Make sure that the maximum number for each group is still followed. In the case that the remaining member(s) decide(s) to continue with his/her/their project, regrouping may not apply but with the consent both the Project and the Subject Advisers, and the Chairman. Revision of the scope may then be an option. The title/topic to be pursued will then be decided among the team members, the Project and the Subject Advisers, and the Chairman.

Manuscript Format

The Capstone Project Manuscript must follow the following format and technicalities:

- Use standard short white bond paper (8.5" x 11")
- Use font Tahoma, Font size 12
- Text computerized in double spacing
- Pagination on upper right corner of each page
- Main title and subtitle should be in bold text and not underlined
- Use College Design Letterhead
- Margins (Top: 1.6"; Bottom: 1"; Left: 1.5; Right: 1")
- Use Fig for Figure. (Fig. 1 The Theoretical Framework of the Study) Note: No description below.
- For tables, table # then below is title of the table, center and bold, then the table illustration below the title.

Capstone Project Guidelines

<u>**Pre-Proposal Stage**</u>

1. Each Capstone Project team (consisting of proponents/researchers) is entitled to scout one (1) project adviser. A **<u>Project Adviser Appointment</u> Form <u>(see Appendices)</u>** should be accomplished in three (3) copies, and be submitted to the Subject Adviser.
2. Each team shall prepare five (5) different topics/projects, which will be presented to the Project Adviser.
3. The Project Adviser would then select three (3) out of the five (5) possible projects. The proponents shall make a **<u>Pre-Proposal Statement (see</u> <u>Appendces)</u>** for each of the three selected topics.
4. The **Title (Pre-Proposal) Hearing** will be scheduled upon the completion of the Pre-Proposal Statement. During this hearing, the research team, the advisers, s e l e c t e d   c o r e   f a c u l t y and the Dept. Chair shall pick only one (1) of the three (3) topics presented.
5. The chosen topic will then be the **Capstone Project** of the team. Only the approved research topic /project should proceed to the research proposal stage. This approved topic will be graded by the panelists.
6. Upon the completion of the **Title Hearing**, the proponents shall accomplish the **<u>Project Working Title Form (see Appendices)</u>** in three (3) copies, and to be submitted to the Subject Adviser.

<u>**Proposal-Stage**</u>

1. At this stage, the project team shall write the proposal manuscript.
2. The team shall prepare all the parts of the proposal manuscript in accordance with the specified time set by the subject adviser. The team always seeks approval from the Project

Adviser regarding all of the required deliverables to be submitted. It should be checked/corrected diligently.

3. Once the project proposal manuscript is complete and final, the researchers will prepare five (5) copies of research proposal for the Proposal or Pre-Oral Defense. The manuscript must be placed in a red plastic folder with slider.

4. The subject adviser then submits to the Chairman the research proposals that are ready for pre-oral defense. Likewise, the date and time of pre-oral defense is arranged.

5. The **Proposal Hearing Guidelines** shall be followed during the proposal hearing.

6. During the proposal hearing, the Project and Subject Advisers, two (2) members of the panel, and the Chair are present.

7. At the end of the proposal hearing, the Chair makes a synthesis and announces the proposal verdict. The proposal verdict may be one of the following:
   a. Accepted with Minor Revisions
   b. Accepted with Major Revisions
   c. Not Accepted

8. The proposal is revised based on the recommendations of the panel members, and the Chair during the pre-oral or proposal defense.

9. The **Panel Members**, and the **Advisers** shall ensure that all recommendations for improvement by the proposal hearing are incorporated in the **proposal oral defense recommendation and suggestions form**.

10. Each team may ask for the assistance of a grammarian during the proposal revision process however since mostly all of us has Premium Grammarly accounts, we can let the students use if for grammar-checking and proofreading.

11. A copy of the **Revised Proposal Manuscript** shall be submitted to the **Subject Teacher.**

12. Team members who cannot propose on the scheduled date will be automatically **DROPPED** from the course or subject. Thus, the members have to re-take the Capstone Project and Research 1 subject.

Final Oral Defense Stage

1. This stage is very critical since this is where the **Development or Implementation, Deployment, and Testing** of the proposed system will be done. It is very important that the Project and the Subject Advisers should work together with the Capstone Project team.

2. There shall be three (3) loops of **System Prototype Testing** and one (1) **Usability Testing** during this stage. The research team, the Project Adviser and the Subject Adviser must ensure that the schedule of the prototype checking is strictly followed.

   a. 1st Prototype (30% - 50% of the modules are implemented) + 1st Manuscript draft

   b. 2nd Prototype (51% - 74% of the modules are implemented) + 2nd Manuscript draft

   c. 3rd Prototype (75% - 95% of the modules are implemented) + 3rd Manuscript draft

   d. Usability or User Acceptance Testing (with 2 Advisers and system users) as testers

3. The **Final Oral Defense Manuscript Format** should be strictly followed.

4. Once the 3rd system prototype checking is done, the proponents must secure a copy of the **Capstone Project Final Oral Defense Checklist** (see Appendices). It is included in the Capstone Manual. This form shall be accomplished together with the subject adviser before the scheduled Final Oral Defense.

5. The accomplished **Final Oral Defense Notice Form**, **System Prototype Testings Form,** and **three (3) copies of the Final Oral Defense Full Manuscript** must be forwarded to the subject Adviser. The full manuscript must be placed in a red plastic folder with slider.

6. Teams who failed to submit the final requirements on the deadline will not be allowed to go through the Final Oral Defense, which means an automatic failing grade and must retake the subject.

7. Considerations may be given depending on the discretion of the panel members.

8. The Research Coordinator will then distribute the final oral defense manuscripts to the members of the panel, the chair, and the advisers. Schedule of the Final Oral Defense will be announced after all the requirements have been met.

9. There shall be **NO SPECIAL SCHEDULE for the Final Oral Defense.** Teams who cannot participate in the scheduled final oral defense will be given a **FAILING GRADE** for the Capstone Project course or subject.

10. The **Final Oral Defense Procedures (see Appendix J)** and the **Oral Defense Protocol (see Appendix I)** shall be followed during this stage.

11. Two (2) members of the panel, the Chair, and the Subject Adviser are present in the Final Oral Defense.

12. In order to demonstrate the team's knowledge on the proposed system, there shall be a partial team **Debugging** during the Final Oral Defense. The team shall fix either the minor flaws of the system or the planted bugs.
Debugging will be done for **thirty (30) minutes only**.

13. At the end of the oral defense, the Chair makes a synthesis and announces the verdict. The final oral defense verdict may be one of the following:
    a. Accepted with Revisions
    b. Subject for Re-Oral Defense
    c. Not Accepted

14. There shall be an individual **Skills Test** after the Final Oral Defense. Each team member shall solve one (1) programming problem using the language and technical tools utilized during the capstone project development. Teams who will get **SYSTEM NOT ACCEPTED** verdict are excluded from the Skills Test.

15. The defense panel Chair and the Project and the Subject Advisers shall ensure that all recommendations for improvement by the oral defense panel are incorporated in the final manuscript. This may include grammar, accuracy of language, adequacy of data, interpretation of results, etc.

16. Each team may ask for the assistance of a grammarian during the proposal revision process (**OPTIONAL**).

17. The approval of the Research Coordinator/Subject Adviser is necessary prior to the final binding of the manuscript.

18. The project team shall submit the following to the Subject Adviser:
    a. One (1) hardbound copy of the **final and complete Capstone Project Manuscript**. The color of the hardbound cover is **red** with **white text**.
    b. A photocopy of the **Approval Sheet (see Appendix K)**
    c. One (1) DVDs containing the following:
        i. Executable file of the system
        ii. Source code of the system
        iii. Final and complete softcopy of the Capstone Project Manuscript (in doc format)
        iv. Final and complete softcopy of the Capstone Project Manuscript (in pdf format)
        v. Other installers (if it is necessary)

19. Teams who can submit the above requirements will then be given a final grade for the subject.

20. The Department chair and the library shall each be furnished a hardbound copy of the research with the approval sheets duly signed by the adviser, panel of examiners and the Dean.

Research Colloquium/Public Presentation

1. The public presentation/exhibit can be also conducted.
2. The final system shall be presented and open for public discussion through an exhibit organized for this purpose.
3. The TEAMS are given at most 8 or 16 hours (8am-12nn and 1pm-5pm) equivalent to 2 days to present the project, simulate the output, and entertain questions from the audience.

The Verdict

The verdict is a unanimous decision among the three members of the thesis defense panel. Once issued, it is final and irrevocable.

Proposal Hearing Verdict:

- **APPROVED WITH MINOR REVISIONS.** Minor revisions are necessary but they do not have to be presented in front of, and checked by all panelists.
- **APPROVED WITH MAJOR REVISIONS**. Major revisions shall be incorporated in the final copy of the Revised Project Proposal Manuscript. These revisions must be checked by the panelists.
- **DISAPPROVED.** The proponent failed to propose a researchable or scholarly project. This verdict will not compel the panelists to give numeric grades. Team members who will get this verdict during the Proposal Hearing will be given a **5.0 FINAL GRADE** for the Capstone Project course or subject.

Final Oral Defense Verdict:

- **ACCEPTED WITH REVISIONS.** Revisions needs to done but they do not have to be presented again to the panelist.
- **RE-ORAL DEFENSE.** A The group needs to be scheduled for another oral defense session in which all identified panel members must be present. This should be done to further clarify the objectives and scope of the capstone project. This verdict will give an **INC** remark to the project team members. Re-Oral Defense is scheduled after the semester ends. The team must re-apply using another **FINAL ORAL DEFENSE Hearing Notice Form** from the subject adviser. During this session, the team must ensure that all recommendations set by the panel members, and the Chair are implemented in the system; otherwise the system will be automatically **NOT ACCEPTED.**

- **NOT ACCEPTED.** The proponents failed to achieve the objectives of the research established in the proposal. Team members who will get this verdict during the Final Oral Defense will be given a **5.0 FINAL GRADE** for the Capstone Project course or subject.

Adviser/Panel Composition

The involvement of either the Statistician or additional content expert (whichever is necessary) in Pre-Oral and/or Oral Defense is **OPTIONAL** and if availed of is to ensure that proper procedures in data management as well as selection and treatment of the research subjects are in place. The Research Coordinator will take the lead in determining who to assign the task. In cases where the panel members chosen are all technically qualified to review the proposed study and statistical treatment of the data is not required, the addition of another content expert is optional.

1 Facilitator (who is also the Research Coordinator/ Subject Adviser) 1 Project

Adviser

2 Panel Members (assigned by the Dean/Chair and/or Research Coordinator) 1

Content Expert (the Dean/Chair or her/his Representative)

1 Statistician (optional)

1 Chairman (only during Final Oral Defense, who happens to be the   Dean or designated by the Dean or Chair or Subject Adviser)

Project Advisers

Any full-time regular faculty member of the BSIT department can be a project adviser as long as the project falls under her area of expertise or specialization. If ever there are only few full-time instructors, we can let a part-time teacher be assigned as a project adviser as long as he or she is teaching in the department.

Duties and Responsibilities

Project Adviser

1. He should make sure that the study proposed by the students conforms to the standard of the University and the BSIT Program and contributes potential impact to University's research thrust.
2. He guides the group in the following tasks/deliverables in the proposal stage:
    a. Defining and refining the research problems/objectives in clear and specific terms
    b. Building a working bibliography/references for the research
    c. Building the research and system methodology parts
3. He should schedule to meet the the team regularly (at least once a month) to answer questions and help resolve conflicts or any issues.
4. Points out errors in all stages either in writing the manuscripts, development or presentation.
5. He conducts thorough review on all deliverables at every stage of the project.
6. Recommends the proponents for proposal hearing and final oral defense. The project adviser has the discretion not to sign the Hearing Notice (for Proposal Hearing and f i n a l Oral Defense) if he believes that the proponents are not yet prepared for the oral defense. Hence, if the proponents fail in the defense, it is partially the adviser's fault for not guiding them on what to do.
7. He can express his points during the proposal hearing and oral defense.
8. He ensures that all required revisions are incorporated in the appropriate documents and implemented in the system.
9. He also should be aware of the timeline and schedule of the activities (including deadlines) and the necessary deliverables.
10. He can also recommend to the project defense panel the nomination of his/her team for an outstanding project award.
11. As a project adviser, he/she is responsible to be:
    a. A provider
    b. An encourager
    c. A dictator
    d. A pushy boss
    e. A connector
    f. An employment agency

Proponents

1. Be informed of the Capstone Project and Research (1 and 2) Guidelines and Policies.
2. Be informed of the schedule of project deliverables, requirements and deadlines posted by Subject Adviser.
3. Submit on-time all deliverables specified in this document as well as those specified by the Subject Adviser.
4. Submit on time the specified quirements identified by the panel members.
5. Attend the scheduled regular meetings (at least once a month) with the subject adviser and project adviser throughout the duration of their capstone journey. The r e g u l a r meetings serve as a venue for the group to report about the progress of their capstone working project, as well as raise any issues or concerns.
6. Attend all meetings scheduled by the Subject Adviser.
7. The team should create an e-portfolio (can use Google site) that serves as a diary of the timeline or progress of their capstone project.

Subject Adviser/Teacher

1. Formulate Capstone Project Manual, and make necessary revisions.
2. Announce project areas/categories (at the start of each semester) to the students.
3. Conduct regular synchronous class with the students to discuss the Capstone Project Guidelines, Policies and Deliverables, Progress and also to allow the students to raise and clarify issues every now and then.
4. Creation of panel composition for every oral defense.
5. Facilitate the scheduling of project activities, such as the deadlines of deliverables and defense sessions.
6. Inform the each group or the entire class of the specific timelines, schedules, defense guidelines, requirements guidelines, and other announcements.
7. Furnish every member of the panel with all the necessary documents like manuscripts and scoresheets before the defense.

8. Act as a research facilitator during the Proposal Hearing and Final Oral Defense. He/she is responsible to record all the suggestions and recommendations of the panel during the oral defense.
9. Organize public presentation/exhibit.

Panel Members/Content Expert

1. Validate the endorsement of the project adviser. The panel members will help in the attainment of the objectives set by group since they are content experts who can provide quality refinement of the project.
2. Evaluate the deliverables presented.
3. Recommend a verdict.
4. Listen and consider the request of the project adviser and/or the proponents.

Chairman

1. Brief the project proponents about the defense program during the actual defense.
2. Issue the verdict unanimously given among the three membes of the panel. Once issued, it is final and irrevocable.

Computation of Grades
CAPSTONE PROJECT AND RESEARCH 1

The detailed computations of the individual final grades are the following:

<u>**Final Grade of the Subject**</u>

Midterm Grade (MG)	30%
Tentative Final Grade (TFG)	70%

<u>**Midterm Grade (MG)**</u>

Average Grade of the Panelists* during the Title (Pre-Proposal) Hearing	70%
Class Standing	30%

*The board of panel during the Title Hearing is composed of the project adviser, subject adviser, and the Dean/Chair.

**The board of panel during the Proposal Hearing is composed of two (2) panel members, and one (1) chair (the Dean).

Tentative Final Grade

Proposal Hearing Grade	65%
Subject Adviser	20%
Project Adviser	10%
Peer Grade	5%

CAPSTONE PROJECT AND RESEARCH 2

Midterm Grade (MG)

Prototyping Scores (1st and 2nd Prototype)	70%
Class Standing	30%

Tentative Final Grade (TFG)

Final Oral Defense	75%
Oral Examination (Individual Grading)	15%
Debugging	15%

Grading Criteria

Title (Pre-Proposal) Hearing

Pre-Proposal Statement (Team Grade)	
Project Title · The title gives a complete overview of what the project is all about.	**(5)**
Scope and Limitations of the Study · Scope and limitations of the project are clearly defined.	**(15)**

Requirements Specifications
   ·   Program, Software, and Hardware Specifications are clearly defined.
   ·   Software and Hardware requirements are available.
   ·   Major program/modules of the project give justification to the project title.
	(15)

Mechanics
   ·   Organization and Fluidity of ideas are apparent.
   ·   Formatting and layout are consistent.
   ·   All parts of the manuscript are grammatically correct.
	(5)

<u>Feasibility</u> 　・　The proposed system is feasible/achievable in terms of: 　　　○　Operational Feasibility 　　　○　Technical Feasibility 　　　○　Schedule Feasibility 　　　○　Economic Feasibility	**(20)**
<u>Practicality</u> 　○　The proposed system is a product of a sound judgment. 　○　The proposed system is relevant to the course. 　○　The proposed system is useful. 　○　The proposed system provides a unique solution, innovation, or a new insight.	**(15)**
<u>Knowledge in the Field</u> 　○　The proponents demonstrate knowledge in the field of computing. 　○　The research team shows mastery of the proposed system.	**(10)**
TOTAL	**(85)**

Oral Examination (Individual Grade)				
<u>Clarity and Content of the Answer (10)</u> 　○　The student thoroughly explains all points. 　○　The responses are very clear and comprehensive.				
<u>Delivery (5)</u> 　○　Delivery is spontaneous. 　○　The student is very confident.				
TOTAL (15)				
PRE-PROPOSAL HEARING TOTAL SCORE (100)				

Proposal Hearing

Capstone Project Proposal Manuscript (Team Grade)	
<u>Presentation Mechanics & Style</u> 　・　The visuals or graphics used are consistent and they enhanced the entire presentation. 　・　The presentation has no misspellings and/or grammatical errors. 　・　The student presents information in logical, interesting sequence which audience can follow. 　・　The student demonstrates full knowledge with explanations and elaborations. 　・　The student used a clear voice, correct and precise pronunciation of the terms.	(5)
<u>Initial Pages</u> 　○　Table of contents is consistent.	(5)

o The title gives a clear idea of what the project is all about (WHAT, WHO, WHERE).	
The problem and its scope and Introduction o Introduction is intact and provides clear overview of the entire project. o Statement of the Problem or Objectives is SMART. o Scope and Limitations of the Project are clearly defined. o Significance of the study and project Highlights are evidently specified.	(20)
Review of Related System/Theoretical System · Related literatures are recent and relevant · Anchor provides solid background of the project · Auxiliary theories are evident · Sources are appropriately cited and noted · Related studies are relevant and includes global and local scope	(10)
Technical Background · There should be comprehensive discussions on the technologies (hardware/software) involved in the project and its related projects in the past.	(15)
Methodology: (Fishbone, FDD, Technical and Schedule Feasibility, IPO, DFD, Use Case Diagram, Sequence Diagram) · Methodology strictly follows the SDLC (esp. for Software Development) · Methodology includes project management techniques appropriate for the chosen project. · Requirements Specification is more or less complete and answers the objectives. · Design Tools used are relevant and appropriate which should be based on requirements. · Development Plan is concrete and should be consistent with the Design. · Testing techniques to be used should assess all aspects of the developed project.	(20)
Final Pages · Bibliography should be in APA format. · Appendices are relevant and help support the principal content. · Terms in the glossary are arranged alphabetically and defined operationally.	(5)
Manuscript Mechanics · Organization and Fluidity of Ideas are apparent. · Formatting and layout are consistent. · All parts of the manuscript should be grammatically correct. · Pagination is proper and consistent in all pages.	(5)
TOTAL	**(85)**

Oral Examination (Individual Grade)				

Clarity and Content of the Answer (10)
  o The student thoroughly explains all points.
  o The responses are very clear and comprehensive.				

Delivery (5)
  o Delivery is spontaneous.
  o The student is very confident.				

TOTAL (15)				
PROPOSAL HEARING TOTAL SCORE (100)				

CAPSTONE PROJECT PROPOSAL VERDICT		Capstone Project Proposal Manuscript (Team Grade) Total Score Range
	APPROVED WITH MINOR REVISIONS. Minor revisions are necessary but they do not have to be presented in front of, and checked by all panelists.	**52 - 85**
	APPROVED WITH MAJOR REVISIONS. Major revisions shall be incorporated in the final copy of the Revised Project Proposal Manuscript. These revisions must be checked by the panelists.	**42.5 - 51**
	DISAPPROVED. The proponent failed to propose a researchable or scholarly project. This verdict will not compel the panelists to give numeric grades. Team members who will get this verdict during the Proposal Hearing will be given a **5.0 FINAL GRADE.**	**Below 42.5**

Final Oral Defense

Capstone Project Output (Team Grade)	

Presentation Mechanics & Style
 	
   · The visuals or graphics used are consistent and they enhanced the entire presentation.
   · The presentation has no misspellings and/or grammatical errors.
   · The student presents information in logical, interesting sequence which audience can follow.
   · The student demonstrates full knowledge with explanations and elaborations.
   · The student used a clear voice, correct and precise pronunciation of the
	(5)

Methodology
 	
   · System Methodology
   · Requirements Specifications, Data and Process/Object Modeling Tools, Data Design, System Architecture, and Testing Tools are all consistent
	(5)

Conclusions and Recommendations
 	
   · Findings and Conclusions are attuned with the objectives.
   · Recommendations are feasible and practical.
	(5)

Manuscript Mechanics
 	
   · Organization and Fluidity of ideas are apparent.
   · Formatting and layout are consistent.
	(5)

Output Software · The Capstone Project output software is consistent with the objectives as defined during the proposal stage.	(35)
Functional Decomposition Diagram and List of Modules · All major modules defined in the Functional Decomposition Diagram and project highlights as defined during the proposal stage are delivered.	(15)
Partial Debugging · The team displayed competence in solving planted bugs or minor flaws.	(10)
TOTAL SCORE (80)	

Oral Examination (Individual Grade)				
Clarity and Content of the Answer (15) o The student thoroughly explains all points. o The responses are very clear and comprehensive.				
Delivery (5) o Delivery is spontaneous. o The student is very confident.				
TOTAL (20)				
FINAL ORAL DEFENSE TOTAL SCORE (100)				

CAPSTONE PROJECT FINAL ORAL DEFENSE VERDICT	Capstone Project Output (Team Grade) Total Score Range
ACCEPTED WITH REVISIONS. Revisions are necessary but they do not have to be presented in front and checked by all panelists. The team should be using the recommendation form during the presentation of revised documents to the adviser.	**36 - 60**
RE-ORAL DEFENSE. Another Defense session, in which all panelists must be present, is necessary to further clarify the objectives and scope of the project. During the redefense, all revisions set by the panelists are implemented in the system; otherwise the verdict will be **NOT ACCEPTED**.	**30 - 35**
NOT ACCEPTED. The proponents failed to achieve the objectives of the research established in the proposal. Team members who will get this verdict during the Final Oral Defense will be given a **5.0 FINAL GRADE.**	**Below 30**

Project Adviser's Criteria for Grading (Please revised based on the deliverables for Proposal and Final Defense)

Team Grade	
Chapter 1 – The Problem and its Scope, Introduction, Review of Related Literature Statement of Problem, And Scope and limitations	(10)
Chapter 1 – Significance of The Study, Project Highlights, and Technical Background	(10)
Chapter 1 – Methodology	(10)
Chapter 2 – Presentation, Analysis and Interpretation of data	(10)
Chapter 3 – Summary of Findings, Conclusions and Recommendations, Implementation Plan, Bibliography and appendices.	(10)
Output Software · The Capstone Project output software is consistent with the objectives as defined during the proposal stage.	(10)
Individual Grade	
Attendance	(10)
Attitude and Contribution to the Group (based on the Capstone Progress Journey)	(30)
TOTAL (100)	

Subject Adviser's Criteria for Grading **(Please revised based on the deliverables for Proposal and Final Defense)**

Team Grade	
Chapter 1 - The Problem and its Scope, Introduction, Review of Related Literature Statement of Problem, And Scope and limitations	(5)
Chapter 1 – Significance of The Study and Technical Background	(5)
Chapter 1 – Methodology	(5)

Chapter 2 – Presentation, Analysis and Interpretation of data	(5)
Chapter 3 – Summary of Findings, Conclusions and Recommendations, Implementation Plan, Bibliography and appendices.	(5)
Output Software • The Capstone Project output software is consistent with the objectives as defined during the proposal stage.	(15)
Functional Decomposition Diagram and Project Highlights • All major modules defined in the Functional Decomposition Diagram and project highlights as defined during the proposal stage are delivered.	(15)
Individual Grade	
Final Oral Defense Performance	(15)
Attendance	(10)
Attitude and Contribution to the Group (based on the Project Journal)	(20)
TOTAL (100)	

Appendix A (Pre-Proposal Statement Template)

CAPSTONE PROJECT
PRE-PROPOSAL STATEMENT

Project Title:	
Proponents:	1. 2. 3. 4.
Project Adviser:	
Significance of the Study:	
Scope and Limitations of the Study:	
Project Design/Development Plan:	• Program Specification (major/important modules to implement) • Software Specification (Contains functional and nonfunctional requirements only) • Hardware Specification

Appendix B (Capstone Project Full Manuscript Details)

Preliminary Pages

- **Title Page** (refer to Appendix E)
- **Approval Sheet** (refer to Appendix K)
- **Acknowledgement** (use third party nouns/pronouns)
- **Abstract**
- **Table of Contents** (use MS Word Table of Contents feature)
- **List of Figures, List of Tables, List of Notations**

Chapter 1
THE PROBLEM AND ITS SCOPE INTRODUCTION
- **Rationale of the Project**
- **Review of Related Systems /Technical Background THE**
PROBLEM
- **Statement of the Problem/Objectives of the Project**
- **Hypothesis/es (if there is data gathering, statistics)**
- **Scope and Limitations of the Project**
- **Significance of the Study and Project Highlights**
- **Methodology**
  - Environment (optional for non-org specific project)
    - Locale
    - Population of the Study
    - Organizational Chart/Profile
  - Requirements Specifications
    - Operational Feasibility
      - Fishbone Diagram
      - Functional Decomposition Diagram
    - Technical Feasibility
    - Schedule Feasibility
      - Gantt Chart
  - Requirements Modeling
    - Input-Process-Output Diagram
    - Process
    - Control
    - Either of the following two (2), whichever is applicable:
      - Data and Process Modeling
        - Context Diagram
        - Data Flow Diagram
        - System Flowchart
        - Program Flowchart (highlights only)
      - Object Modeling
        - Use Case Diagram

- o Class Diagram
- o Sequence Diagram
- o Activity Diagram
- o Analysis

- Cost and Benefit Analysis (for projects that entails monetary costs)
- Cost Recovery Scheme (for projects that entails monetary costs)
- Risk Assessment/Analysis
  - o Design
    - Output and User-Interface Design
      - Forms
      - Reports
    - Data Design
      - Entity Relationship Diagram (use MS Access Relationships but not preferable for implementation)
      - Data Dictionary
    - System Architecture
      - Network Model
      - Network Topology
      - Security
  - o Development
    - Software Specification
    - Hardware Specification
    - Program Specification
    - Programming Environment
      - Front End
      - Back End
    - Deployment Diagram
    - Test Plan
  - o Testing
    - Unit Testing
    - Integration Testing
    - System/Alpha Testing
    - Acceptance Testing (must be done after the final oral defense)
- **DEFINITION OF TERMS/GLOSSARY**

Chapter 2
PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA
- Based on Interview Guide questions (How data is gathered, analyzed and interpreted)

Chapter 3
- **Summary of Findings**
  - o PROTOTYPING FINAL RESULTS AND USABILITY TESTING RESULTS
- **FINAL GUI**
- **Conclusion**

- **BIBLIOGRAPHY**
- **APPENDICES**
    - o Relevant Source Code
    - o Evaluation Tool
    - o Sample Input/Output/Reports
    - o Users Guide -EULA
    - o Other Relevant Documents
    - o Project Working Title Form
    - o Signed Transmittal Letter
    - o Project Adviser Appointment Form
    - o Grammarian's Certification (optional)
    - o Curriculum Vitae

Appendix C (Title Page)

ONLINE INFORMATION

SYSTEM

(Must be inverted pyramid form, all caps)

A Capstone Project Presented to

Information Technology Department

Cebu Technological University - Argao Campus

In Partial Fulfillment of the Requirements

for the degree Bachelor of Science in Information Technology

By

Juan Dela Cruz

Pedro Reyes

May 2019

Appendix D (Project Adviser Appointment Form)

CAPSTONE PROJECT

PROJECT ADVISER APPOINTMENT FORM

This is to formally appoint

_____as the adviser of

the Capstone Project of the following proponents:

Proponent	**Job Description/Roles**	**Signature**

Conforme: **Noted:**

_____   _____
(Signature of the Project Adviser   (Signature of the Subject Adviser
over printed name)   over printed name)

_____   _____
Date   Date

Approved:

_____
Chairperson

_____
Date

***Accomplish in 3 copies

Appendix E (Project Working Title Form)

CASPTONE PROJECT WORKING TITLE FORM

Proponents:

1)	
2)	
3)	
4)	

Proposed Project Title:

Submitted by:

(Signature of Project Manager over printed name)

Date

Noted:

(Signature of Project Adviser over printed name)

(Signature of Subject Adviser over printed name)

Approved:

(Signature of the Chairperson over printed name)

Appendix F (Grammarian's Certification): OPTIONAL

CERTIFICATION

This is to certify that the research study of

_____

_____

_____

_____

entitled
_____

was submitted to the undersigned for correction and grammar as to text.

This is purposely written to attest for whatever purpose this may serve.

Given this_____day of _____.

_____

(Grammarian's signature over printed name)

Appendix G (Proposal Hearing/Final Oral Defense Protocol)

General House Rules

1. The conduct of proposal hearing/oral defense is considered an academic and professional exercise.

2. The chair, adviser, and members, as a committee, are responsible for the improvement and enrichment of the project study/thesis.

3. As a committee, it is tasked to assist the student succeed in his/her research undertaking.

4. The appointed chair leads the proceedings of the hearing/examination. He/she starts and ends the activity.

5. The following shall be the preliminaries of the proposal hearing/oral defense:

   a. Opening Prayer (to be lead by the student/s)

   b. Introduction of the students, adviser, members and the chair (to be done by the chair)

   c. Presentation of proposal by the students

      i. **For proposal hearing**

         1. Title

         2. Rationale and Review of Related System/Theories/Theoretical Framework

         3. Statement of the Problem

         4. Scope and Limitations of the Project

         5. Significance of the Study

         6. Technical Background

         7. Methodology

      ii. **For oral defense**

1. Title

2. Introduction

3. Technical Background

4. Methodology

5. Presentation, Analysis and Interpretation of data

6. Summary of Findings, Conclusions and Recommendations

6. The chair as the presiding officer shall ensure a friendly and professional atmosphere of the proceedings.

7. The chair may start to ask the question and followed by the members.

8. The members should ask permission/acknowledgement from the chair when asking questions or clarifications from the student or adviser.

9. The adviser may answer or clarify, on behalf of the student, questions or queries of the examiners only if acknowledge by the chair.

10. The examiners should clearly write down their comments and suggestions on the assessment tool.

11. It is the duty of the chair and members of the research committee/oral examination committee to give constructive and objective evaluation of the manuscript and the oral presentation of the student.

12. The chair, on behalf of the committee, shall declare if the student has passed or failed in the proposal hearing/oral examination.

13. The student is required to incorporate the suggestions of the panel and submit the revised manuscript and/or program to the Dean.

14. A grade of **INR** will be given to a student who fails to submit the revised manuscript/program.

Appendix H (Final Oral Defense Procedures)
As recommended by THE

SUBJECT ADVISER

And approved by

THE PANEL MEMBERS AND THE CHAIR

1. The research adviser will check the Final Research Manuscript on or before

   _____.

2. A Final Oral Defense Checklist will be accomplished by the research adviser to ensure that the Research Manuscript is complete.

3. Once the Research Adviser decides that the team is ready to present their work, the team will then reproduce that Final Research Manuscript in five (3) copies.

4. The team will submit the Final Research oral manuscript and the accomplished Final Oral Defense Checklist and System Prototype Checking Form, to the Subject Adviser/Research Coordinator on or before an agreed date.

5. If the team cannot submit the Final Research Manuscript on the cut-off date and time, the team will be given an INR and will be excluded from the scheduled Final Oral Defense.

6. If the verdict of the panel members and the chair is SYSTEM ACCEPTED, the team will then conduct an acceptance testing. The results of this software test will be included in the Chapter III of the manuscript.

7. The last day of submission of the revised FINAL RESEARCH MANUSCRIPT in hardbound copies complete with CD/DVD (documentation and system) will be on an agreed date. Submit these requirements to the Subject Adviser. The cut-off time of submission will be until 4:00PM.

8. An INR will be given to the team who failed to submit the hardbound copies.

Appendix I
APPROVAL SHEET

The Capstone Project entitled **Municipality of Argao Public Vehicle Information System** prepared and submitted by Juan Dela Cruz and Peter Reyes has been examined and is recommended for approval and acceptance.

RECOMMENDED: <u>Name of Adviser</u>   <u>Name of Coordinator</u>

                              Adviser   Research Coordinator

===

APPROVED by the Committee on Oral Examination with a grade of_____on May 30, 2019.

_____

Chairman

_____   _____

Member   Member

===

ACCEPTED and APPROVED in partial fulfillment of the requirements in Bachelor of Science in Information Technology.

<u>Name of the C</u>

Date: _____

Appendix J

Capstone Project Proposal Hearing Checklist

Project Working Title: _____

Proponents: _____

_____

_____

_____

Kindly tick the box on the left if the specific requirement is accomplished.

	Preliminary Pages • Title Page • Table of Contents • List of Figures, List of Tables

	• **The Problem and Its Scope**
	    o **Introduction**
	        ▪ Rationale of the Project
	        ▪ Review of Related Systems/ Theoretical Background
	    o **The Problem**
	        ▪ Statement of the Problem/Objectives of the Project
	        ▪ Hypothesis/es (if statistic is applied)
	        ▪ Scope and Limitations of the Project
	        ▪ Significance of the Study and Project Highlights

	• **Research Methodology** (planning only; narrative description)
	    o Design
	    o Environment (optional for non org-specific problem)

	System Methodology
	        o Technical Feasibility and Schedule Feasibility
	        o IPO, UCD, Flowchart

	Hearing Notice Form for the Proposal Hearing
	Bibliography
	Definition of Terms
	Format Technicalities

Appendix K

Capstone Project Final Oral Defense Checklist

Project Title:_____

Proponents: _____

_____

_____

_____

Kindly tick the box on the left if the specific requirement is accomplished.

	Preliminary Pages

	Chapter 1 The Problem and its Scope
	 Introduction
	    • Rationale of the Project
	    • Theoretical background with framework

	The Problem
	    • Statement of the Problem/Objectives of the Project
	    • Hypothesis/es (if there is data gathering)
	    • Scope and Limitation of the project
	    • Significance of the Study/Project Highlights

	> Methodology (which includes the design, flow of the study IPO, environment, population of the study, instrument, treatment of data) > Requirements specifications which includes technical feasibility, schedule feasibility (GANTT Chart) > Requirements modeling (Data flow diagram, System flowchart, use case diagram, activity diagram, entity relationship diagram, network topology for system architecture) > final list of modules
	Chapter 2 Presentation, Analysis and Interpretation of Data
	Chapter 3 Summary of Findings, Conclusions, And Recommendations****
	Hearing Notice Form for the Final Oral Defense
	Bibliography
	Appendices
	Glossary

Format Technicalities

The Capstone Project Manuscript must follow the following format and technicalities:

- Use standard short white bond paper (8.5" x 11")
- Use font Tahoma, Font size 12
- Text computerized in double spacing
- Pagination on upper right corner of page
- Main title and subtitles should be in bold text and not underlined
- Use College Design Letterhead
- Margins (Top: 1.6" ; Bottom: 1" ; Left: 1.5 ; Right: 1")
- Use Fig for Figure. (Fig. 1 The Theoretical Framework of the Study) Note: No description below.
- For tables, table # then below is title of the table, center and bold, then the table illustration below the title.

Appendix L (Final Requirements Checklist)

Capstone Project Final Requirements Checklist

Project Title: _____

Proponents: _____

_____

_____

_____

Kindly tick the box on the left if the specific requirement is accomplished.

	1 hardbound copy of the final and complete Capstone Project Manuscript
	A photocopy of the Approval Sheet
	3 DVDs containing the following • Executable file of the system • Source code of the system • Final and complete softcopy of the Capstone Project Manuscript (in doc format) • Final and complete softcopy of the Capstone Project Manuscript (in pdf format) • Other installers (if necessary)
	Public Presentation/Exhibit (optional)

Appendix M (System Prototype Checking Logs Form)

Must attach with this form the official list of modules/pages

Capstone Project System Prototype Checking Logs Form

Capstone Project Title:

Names of Proponents:

Total # of Modules

as noted by the Project Adviser: and approved by the Subject Adviser:

First Prototype	30% - 50% of the modules are fully implemented or running	checking should be within _____

		Remarks:
Date and Time of Consultation		
# of Modules Fully Implemented (1 pt each)		
# of Modules Partially-Implemented (0.5 pt each)		
Running Score		

Percentage:

Proj. Manager's Signature:

Proj. Adviser's Signature:

| Second Prototype + Capstone Project Manuscript Draft 2 Checking | 51% - 74% of the modules/pages are fully implemented or running | checking should be within _____ |

		Remarks:
Date and Time of Consultation		
# of Modules Fully Implemented (1 pt each)		
# of Modules Partially-Implemented (0.5 pt each)		
Running Score		
Percentage:		

Proj. Manager's Signature:

Proj. Adviser's Signature:

Third Prototype + Capstone Project Manuscript Draft 3 Checking	75 % - 100% of the modules/pages are fully implemented or running	checking should be within _____

		Remarks:
Date and Time of Consultation		
# of Modules Fully Implemented (1 pt each)		
# of Modules Partially-Implemented (0.5 pt each)		
Running Score		
Percentage:		

Proj. Manager's Signature:

Proj. Adviser's Signature:

*This is to certify that I have been regularly consulted by my advisees; have reviewed their system output as well as the required manuscript of the above stated study. As their   Project Adviser, I therefore submit them ready for Final Oral Defense as their third prototype is within the required percentage as scheduled on*_____.

_____

(Signature of Project Adviser over printed name)

Appendix N (Proposed Project Approval Form)

Proposed Project Name:		

SCHOOL INFORMATION	
School:	
Address:	
Chairman's Name:	
Office Contact No:	
PROJECT MANAGER'S INFORMATION	
Project Manager's Name:	
Address:	
Contact No:	
PROJECT ADVISER'S INFORMATION	
Project Adviser's Name:	
Address:	
Contact No:	
PROJECT ENVIRONMENT INFORMATION	
Project Environment:	
Representative:	
Contact No:	
Project Decision/Action:	☐ **Approve** **Reject**
Project Environment's Comment(s):	

Note: The Project Environment Representative should either **accept** or **reject** the project and include any comments. If the Project Environment Representative is rejecting the project, the reason for rejection must be provided. If the project is being approved, the Project Environment Representative must sign the form and enter the Date approved.

Project Environment Representative's Signature over Printed Name   Date Approved

REFERENCES:

15 - CMO25s2015 - Mel Albert A. Agra. https://sites.google.com/a/carsu.edu.ph/mel-albert-a-agra/15---cmo25s2015

ST. JOHN PAUL II COLLEGE OF DAVAO.
http://stjohnpaulcollegeict.weebly.com/uploads/5/6/3/5/56356733/capstone_guidelines_(1).pdf

Cpe orientation. https://www.slideshare.net/dwightsabio/cpe-orientation

Capstone Project Guidelines - University of Cebu CICS Portal.
https://studylib.net/doc/9790827/capstone-project-guidelines---university-of-cebu-cics-portal