**ATTENDANCE MONITORING SYSTEM**

**WITH BARCODE SCANNING**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

A Capstone Project Presented to the Faculty of the

College of Information and Computing Sciences

CAGAYAN STATE UNIVERSITY

Gonzaga, Cagayan

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

In Partial Fulfilment of the Requirements for the Degree

**BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**FRANCIS NEIL P. PAJAMUTAN**

**RIEZA MAE B. BACLIG**

**JULIE ANN A. NOLASCO**

**JHOANA LAY RUMIAS**

**ABSTRACT**

|  |  |
| --- | --- |
| **TITLE :** | ATTENDANCE MONITORING SYSTEM WITH BARCODE SCANNING |
| **RESEARCHERS:** | FRANCIS NEIL P. PAJAMUTAN  RIEZA MAE BACLIG  JULIE ANN A. NOLASCO  JHOANA LAY RUMIAS |
| **DEGREE :** | BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY (BSIT) |
| **INSTITUTION :** | CAGAYAN STATE UNIVERSITY |
| **YEAR :** | 2025 |
| **ADVISER :** | MR. JEFREY S. QUINIANO  Part-time Faculty |
|  |  |

**TABLE OF CONTENTS**

[**CHAPTER 1** 1](#_Toc192497773)

[**INTRODUCTION** 1](#_Toc192497774)

[**PROJECT CONTEXT** 2](#_Toc192497775)

[**PURPOSE AND DESCRIPTION** 3](#_Toc192497776)

[**OBJECTIVES OF THE STUDY** 3](#_Toc192497777)

[**CONCEPTUAL FRAMEWORK** 4](#_Toc192497778)

[**SCOPE AND LIMITATION** 5](#_Toc192497779)

[**SCOPE** 5](#_Toc192497780)

[**LIMITATION** 5](#_Toc192497781)

[**SIGNIFICANCE OF THE STUDY** 6](#_Toc192497782)

[**DEFINITIONS OF TERMS** 8](#_Toc192497783)

[**CHAPTER 2** 9](#_Toc192497784)

[**REVIEW OF RELATED LITERATURE** 9](#_Toc192497785)

# **CHAPTER 1**

# **INTRODUCTION**

## **PROJECT CONTEXT**

Student attendance recording is essential in tracking the effectiveness of students’ engagement. However, many institutions still rely on the traditional paper and pen method which is prone to inefficiencies. As technology continues to expand, we should keep up with the trend by making attendance monitoring digital.

Institutions including Cagayan State University Gonzaga Campus still rely on the manual paper and pen method that has been known to cause issues like missed entries, commotions, additional workload, and hectic setup. Aside from that, this method may lead to record management challenges. For students, this method also consumes valuable time that may sometimes discourage and hinder students’ engagement.

The Attendance Monitoring System with Barcode Scanning capstone project aims to address these issues by providing a digital solution that offers a reliable way in recording and managing attendance. By using this system, it reduces inefficiencies by minimizing paperwork that is also ecological, enabling real-time monitoring and reporting, and allowing administrators to generate reports. Overall, the system enhances record management and streamlines operations.

## **PURPOSE AND DESCRIPTION**

The Attendance Monitoring System with Barcode Scanning is designed to improve the process of attendance recording, making it more efficient than traditional paper and pen based attendance recording method. This system utilizes barcode encoded with the value of each students unique ID number. To record attendance, the facilitator simply creates an attendance sheet then scans the student’s barcode using a barcode scanner, or mobile app’s barcode scanning feature, or manually entering student ID number.

## **OBJECTIVES OF THE STUDY**

The general objective of the study is to develop Attendance Monitoring System with Barcode Scanning for Cagayan State University – Gonzaga Campus.

Specifically, it aims to:

* Determine the problems faced by students and facilitators when recording attendance.
* Design and develop a system for efficient attendance monitoring.
* Ensure the system aligns with ISO 25010.
* Implement the developed system to the intended users.

## **CONCEPTUAL FRAMEWORK**

**OUTPUT**

**PROCESS**

**INPUT**

Problems and Challenges.

Student Information

Barcode Data

Scanning Device

ISO 25010

Attendance Monitoring System with Barcode Scanning

Problem Analysis

System Development Life Cycle

System Evaluation

ISO 25010

Feedback

Figure 1: Conceptual Framework (IPO) of AMSBS

This study uses Input-Process-Output (IPO) framework, which represents the flow of data through development process. The diagram illustrates the IPO framework of Attendance Monitoring System with Barcode Scanning. Input covers the problems and challenges, student information, barcode data, scanning device, compliance with ISO 25010. Process involves problem analysis, design, evaluation, and compliance with ISO 25010. Output is the digital solution for efficient attendance monitoring, the Attendance Monitoring System with Barcode Scanning. With a feedback loop ensuring system support for updates and further improvements.

## **SCOPE AND LIMITATION**

### **SCOPE**

This project titled “Attendance Monitoring System with Barcode Scanning” is designed to automate and make attendance tracking processes more efficient benefiting students and attendance facilitators in Cagayan State University – Gonzaga Campus.

The system will focus on the following key areas:

1. **Attendance Facilitators** - responsible for creating attendance sheets, scanning barcodes and generating reports.
2. **Students** – required to present their barcode encoded ID to record their attendance.
3. **Barcode Scanning:** This system will utilize barcode technology to record attendance. Each student will have their unique barcode with the value of their student ID number.
4. **Attendance Management:** This system will allow attendance facilitators to create attendance sheets, record attendance, monitor attendance in real time, and generate printable reports.

### **LIMITATION**

1. **User Limitation:** This system is specifically designed to CSU Gonzaga Campus. It may be extended to other institution if further development is undertaken.
2. **Functionality:** This system main purpose is for efficient attendance monitoring and reporting.
3. **Barcode Dependency:** This system will rely on barcode scanning to record attendance. In cases where the students’ barcode is not available, manually entering their student ID number is an alternative option.
4. **Offline Functionality:** This system connection will rely on active internet.

## **SIGNIFICANCE OF THE STUDY**

This study is significant as it will produce a system that will benefit Cagayan State University – Gonzaga Campus' students, attendance facilitators, and other related stakeholders. By making the attendance system digital, it improves the process and makes attendance management more efficient compared to traditional paper and pen based method.

The following will benefit from this project:

* For **Cagayan State University Gonzaga**: This system will make attendance management more efficient and ecological. By using this system, aside from efficient attendance monitoring, it would also significantly reduce paper usage by making attendance monitoring be done digitally.
* For **Students**: This system will streamline the process of recording their attendance. It reduces the hassle experience of waiting in long lines, and sometimes hectic setups.
* For **Attendance Facilitators**: This system will make attendance monitoring efficient and accessible as this system automatically generates reports that you can view, download, and print.
* For **Future Researchers**: This system may serve as a foundation for innovation in the field of attendance management. This project also opens opportunities for studying impacts of digital attendance management student engagement, administrative efficiency, and environmental sustainability.

## **DEFINITIONS OF TERMS**

**AMSBS** – acronym for Attendance Monitoring System with Barcode Scanning

**Barcode Scanner** – the physical barcode scanning device to record attendance.

**Barcode** – the printed barcode with the value of student ID number.

**Attendance Facilitator** – the persons responsible for recording attendance.

**Student** – person who presents their barcode to be scanned by the attendance facilitator.

**Administrator** – the person who’s responsible for managing the website.

**Attendance Sheet** – the created attendance sheet through AMSBS.

**Attendance Name** – the subject code, description, activity, or event of the attendance.

**Attendance Date** – the date of the attendance sheet.

**Attendance Time In / Out** – the time in and time out of the attendance sheet.

**Participants** – the students expected to participate and record their attendance.

**Present / Late / Absent** – the remarks of students’ attendance.

**Active Attendance Sheets** – the attendance sheets that are ongoing.

**Recorded Attendance Sheets** – the attendance sheets that has been recorded.

# **CHAPTER 2**

# **REVIEW OF RELATED LITERATURE**