

**Website-Based Indoor Navigation System with QR Integration for Locating Classrooms at UMTC**

**A PROJECT PROPOSAL FOR CCE 106/L**

**APPLICATION DEVELOPMENT AND EMERGING TECHNOLOGY**

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**Introduction**

New students often experience difficulties finding their classrooms in the university’s large buildings due to the many rooms and floors. This problem causes delays, stress, and a constant need to ask for directions. Students with disabilities face even greater challenges when navigating areas without proper guidance.

**Research Related Literature (RRL)**

**Solution**

To address these issues, this project proposes the development of a Website-Based Indoor Navigation System. The system will use QR codes to help students quickly and independently find their classrooms. This project aims to improve navigation within the campus.

**Objectives**

**General Objectives**

To design and develop a Website-Based Indoor Navigation System that will assist students in finding classrooms easily and efficiently.

**Specific Objectives**

1. Specifically, this project aims to provide an accessible web-based navigation tool for students and visitors, including persons with disabilities.
2. It also aims to integrate QR codes for real-time indoor navigation and reduce dependency on asking directions from others.
3. To develop a system that allows administrators to manage and update classroom information displayed on the 2D map.
4. To design the website so that users can conveniently access navigation features and classroom information through both mobile and desktop browsers.

**Scope and Limitations**

The system will provide indoor navigation within the university building using QR codes, supported by features such as a 2D digital map and QR code scanning for location access. It will be accessible through a website that can be viewed on both desktop and mobile browsers, but it requires an internet connection and a device with a camera for QR code scanning. For the system to function properly, QR codes must be installed in hallways and entry points.

The system will initially be limited to the UM Visayan campus only and will not cover other campuses or external facilities until further expansion is made.

**Functional Requirements**

These describe what the system must do:

1. The system must allow users to scan QR codes placed in hallways and entry points.

2. The system must display the user’s current location on a 2D map of the UM Visayan building.

3. The system must provide step-by-step navigation from the scanned QR point to the target classroom.

4. The system must let users search for a specific classroom through the website.

5. The system must show directional arrows or paths on the map to guide users.

6. The system must be accessible via both desktop and mobile web browsers.

7. The system must require an internet connection and a device camera for

QR scanning.

**Non-Functional Requirements**

These describe the quality and constraints of the system:

1. **Usability** – The website should have a simple and user-friendly interface for easy navigation.

2. **Performance** – The system should load maps and directions after scanning a QR code.

3. **Reliability** – The system should provide accurate and consistent navigation results.

4. **Scalability** – The system should allow expansion to cover more buildings in the future.

5. **Security** – The system should prevent unauthorized access or tampering with QR code data.

6. **Compatibility** – The website should work on major browsers (Chrome, Firefox, Safari, Edge).

7. **Maintainability** – The system should be easy to update when classroom assignments or maps change.