PUP-TAGUIG FACULTY LOADING AND SCHEDULING SYSTEM

Software Design Specification

Version 1.0

Prepared by:

UNTITLED

Malaluan, Kyla Rica C.

Martinez, Emmanuel Miles.

Naoe, Adrian B.

Rasquero, Via Clariz.

August 25, 2024

Table of Content

Revision History

Version	Name	Reason for Changes	Date
1.0	UNTITLED	Initial Draft	August 25, 2024

Approved By

Name	Signature	Department	Date
Malaluan, Kyla Rica C.		BSIT – Quality Assurance | Developer	August 25, 2024
Martinez, Emmanuel Miles .		BSIT – Project Manager | Developer	August 25, 2024
Naoe, Adrian B.		BSIT – Technical Lead | Developer	August 25, 2024
Rasquero, Via Clarisse		BSIT – Technical Writer | Developer	August 25, 2024

1. Introduction

1.1 Purpose

This design document will provide a detailed outline of the implementation of the requirements as defined in the Software Requirements Specification of the PUP Taguig Faculty Loading and Scheduling System (PUPT-FLSS). It is intended to present the system's design to help understand the system's functionality.

1.2 Scope

This document will explain how the design will accomplish the functional and non-functional requirements specified in the PUPT-FLSS Requirements Specification (SRS) document.

1.3 System Overview

The PUP Taguig Faculty Loading and Scheduling System (PUPT-FLSS) is a web-based application intended to streamline the management and scheduling of faculty resources. It replaces the current manual process, aiming to provide an efficient interface for faculty members to organize their schedules and for administrators to manage and allocate teaching loads effectively.

1.4 Definitions and Acronyms

Term/Acronym	Definition
SRS	System Requirement Specification
SDS	Software Design Specification
PUPT-FLSS	Polytechnic University of the Philippines Taguig Faculty Loading and Scheduling System
CSFLS	Class Scheduling and Faculty Loading System
DBMS	Database Management System. A programmable interface which provides a common layer of abstraction between a physical database and a user or external program.

1.5 References

The references for this capstone project were compiled from various academic and technical sources, including the ISO 25010 standard for software quality evaluation, relevant literature on faculty management systems, and existing software requirements specifications related to educational management systems. Additionally, references include documentation and specifications related to the "PUP Taguig Faculty Loading and Scheduling System," which serves as the foundation for this project.

1.6 Overview of Document

This document is meticulously crafted to serve as a comprehensive guide for the technical team responsible for the ongoing development of the "PUP Taguig Faculty Loading and Scheduling System." It outlines the software specifications, functional requirements, and operational guidelines necessary for the effective management of faculty scheduling and loading processes. Additionally, this document provides detailed instructions for system administrators to analyze, troubleshoot, and resolve any issues or errors that may arise during the system's operation, ensuring a seamless user experience and adherence to quality standards.

2. System Architecture Description

1.1 System Description

The PUP Faculty Loading and Scheduling System is a digital platform that integrates the Human Resource Information System (HRIS) with the Faculty Loading System (FLS). This integration ensures that faculty data is consistently updated and accessible for scheduling. Academic program directors can set the active school year, semester, and curriculum, creating a foundation for scheduling tasks. After configuration, faculty receive email notifications prompting them to log in and select their preferred time slots, courses, and year levels to teach. The system checks for any unassigned year levels or courses and alerts administrators if necessary. Once all selections are confirmed, it generates comprehensive reports summarizing faculty loads and schedules, ensuring efficient management and minimal conflicts.

1.2 Overview

The PUP Faculty Loading and Scheduling System is an online tool that simplifies scheduling for faculty and program directors. It combines the Human Resource Information System (HRIS) with the Faculty Loading System (FLS) to provide up-to-date faculty information. Directors can set the academic year and courses, while faculty can choose their preferred schedules. The system checks for conflicts and creates reports, making it easier to manage faculty assignments.

1.3 Scope of the Development Project

The "*PUP Taguig Faculty Loading and Scheduling System*" aims to modernize and streamline the faculty workload management and class scheduling processes at the Polytechnic University of the Philippines – Taguig Branch. This project involves the development and implementation of a functional, user-friendly, and reliable web-based system that allows administrators and faculty members to efficiently manage course assignments, faculty loads, and scheduling conflicts. The system will facilitate the submission, compilation, and review of faculty schedules and workloads by key stakeholders, including Academic Administrators, Curriculum Developers, and Faculty Members. These stakeholders will have the ability to evaluate and approve schedules, ensuring that all faculty assignments align with institutional policies and academic requirements. The system will also generate comprehensive reports and analytics to support decision-making and enhance the overall efficiency of academic administration at PUP Taguig.

1.4 System Context Diagram

1.5 Data Flow Diagram

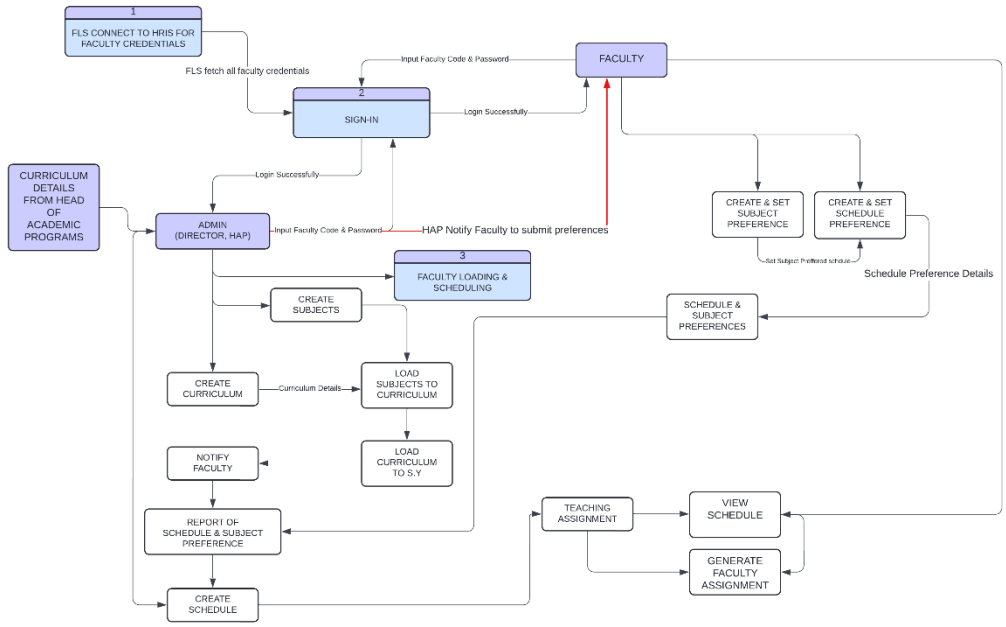


Figure 2. Data Flow Diagram

1.6 User Interface

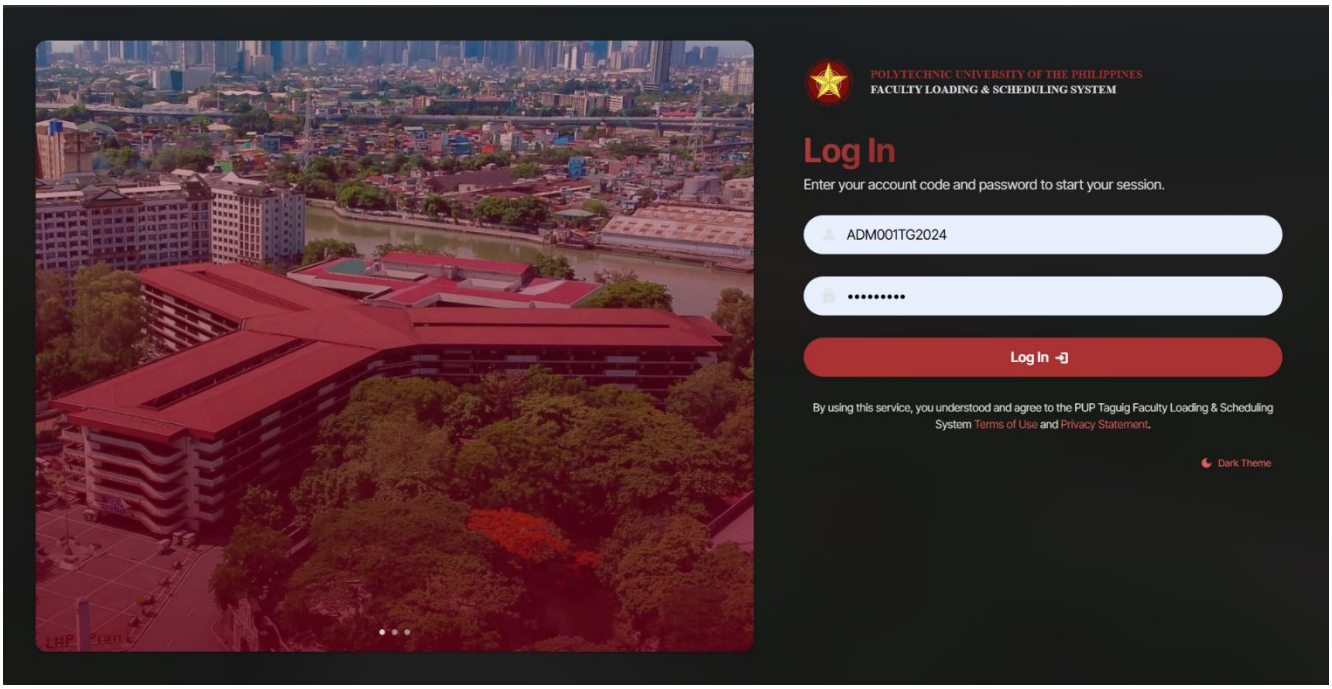


Figure 3. FLS Login Page. Faculty and Admins must login to FLS.

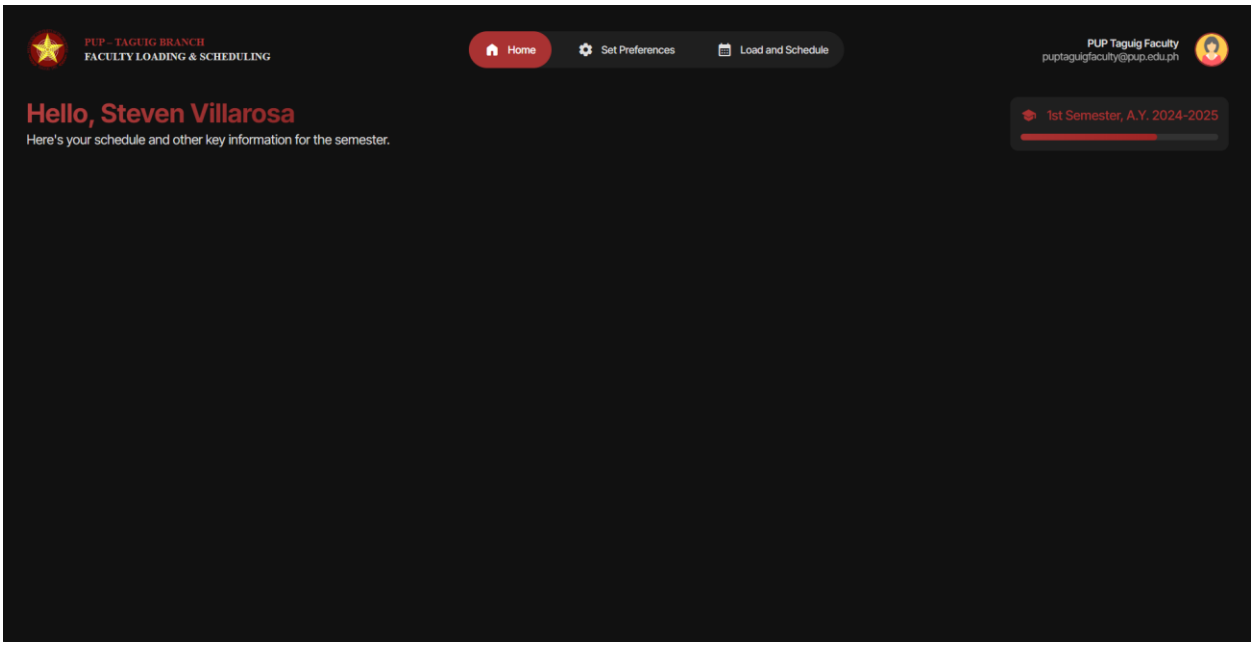


Figure 4. FLS Faculty Homepage or Dashboard.

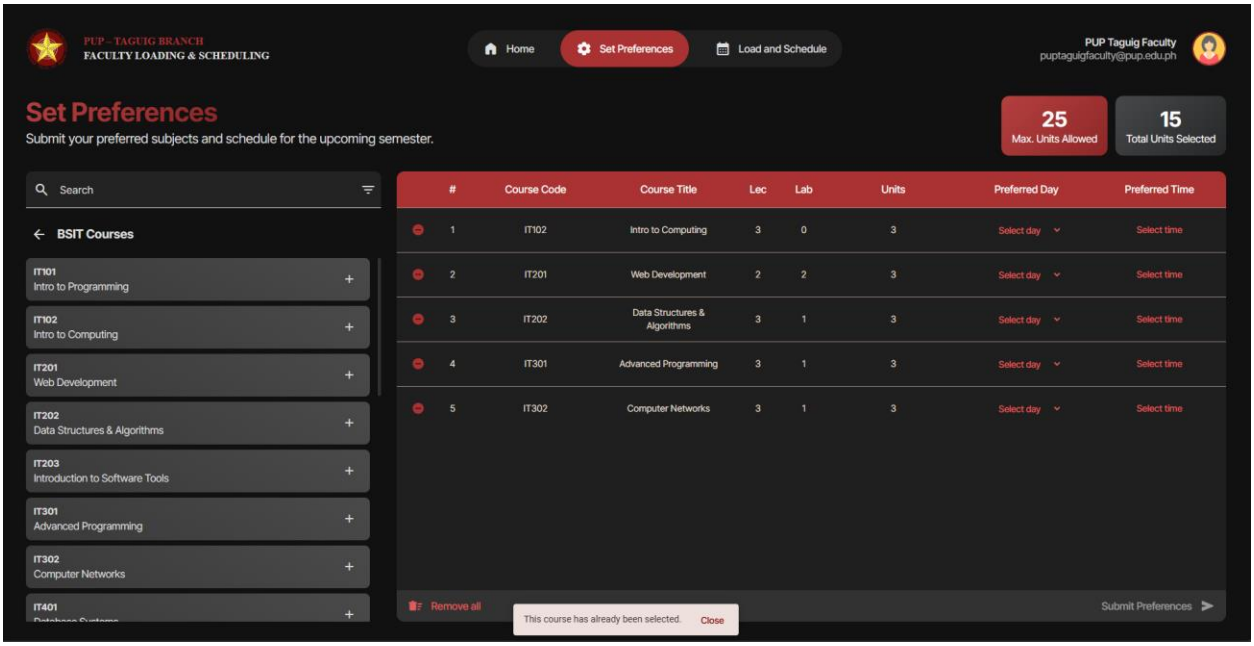


Figure 5. FLS Faculty Set Preference Pages.

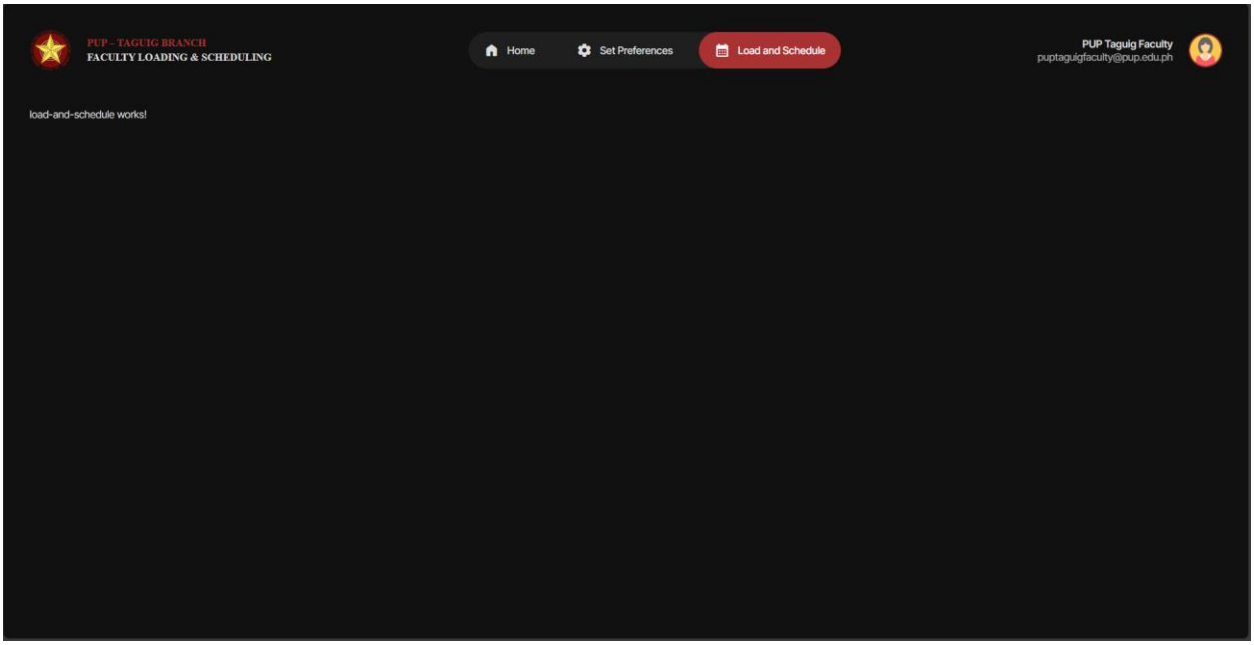


Figure 6. FLS Load and Schedule Page.

Figure 7. FLS Admin Overview Page.

Figure 8. FLS Admin Faculty Monitoring Page.

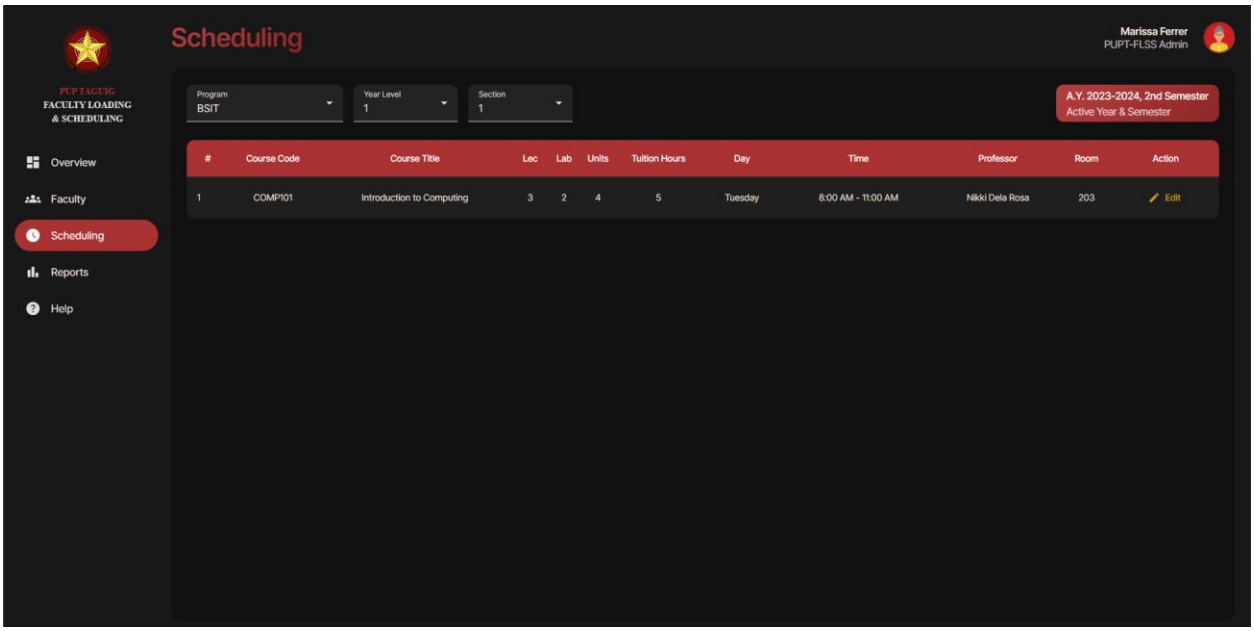


Figure 9. FLS Admin Faculty Scheduling Page.

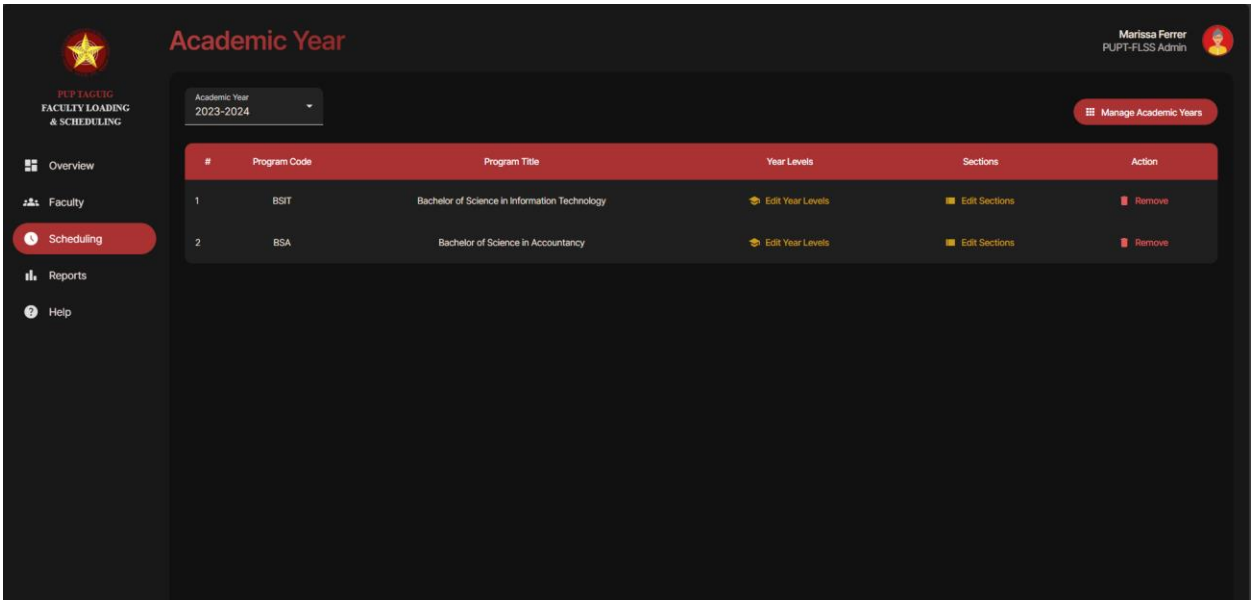


Figure 10. FLS Admin Academic Year Management Board.

Figure 11. FLS Admin Report Dashboard.

Figure 12. FLS Admin Help Dashboard.

Figure 13. FLS Super Admin Help Dashboard.

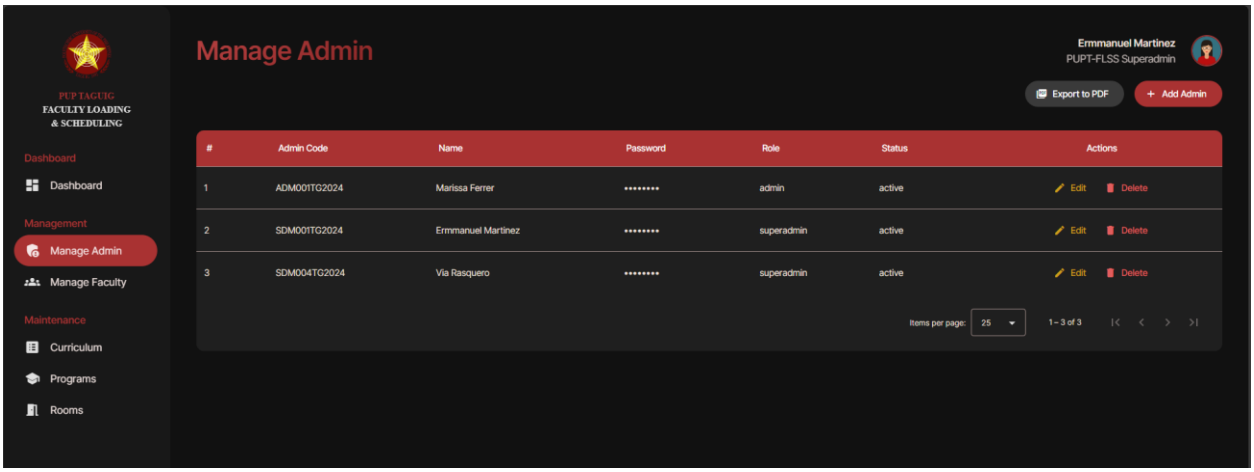


Figure 14. FLS Super Admin, Admin Management Page.

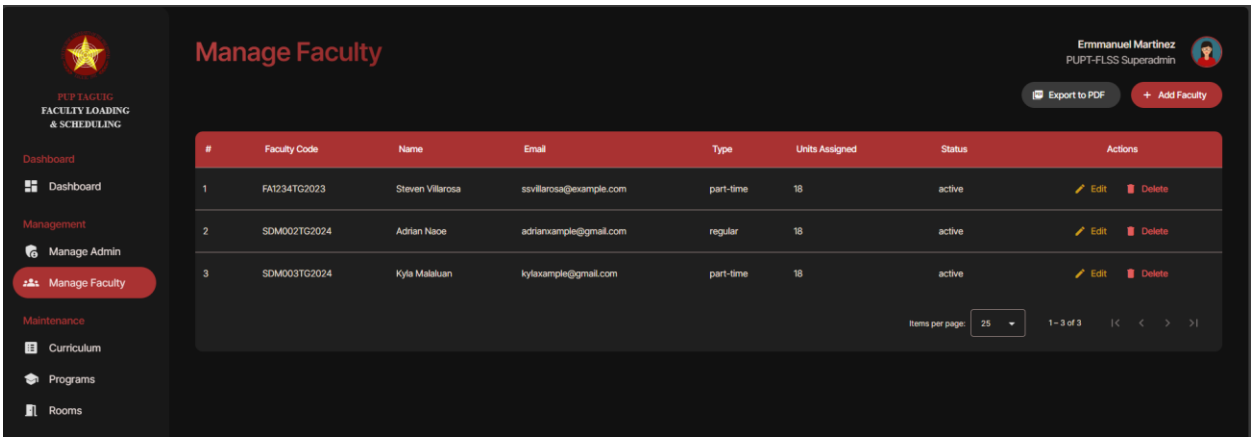


Figure 15. FLS Super Admin, Faculty Management Page.

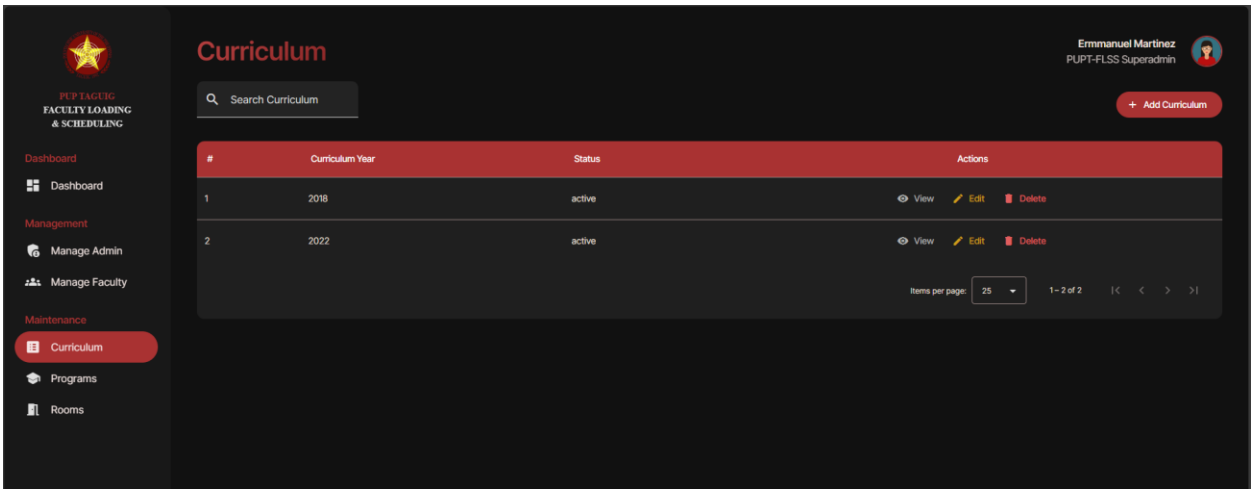


Figure 16. FLS Super Admin, Curriculum Management Page.

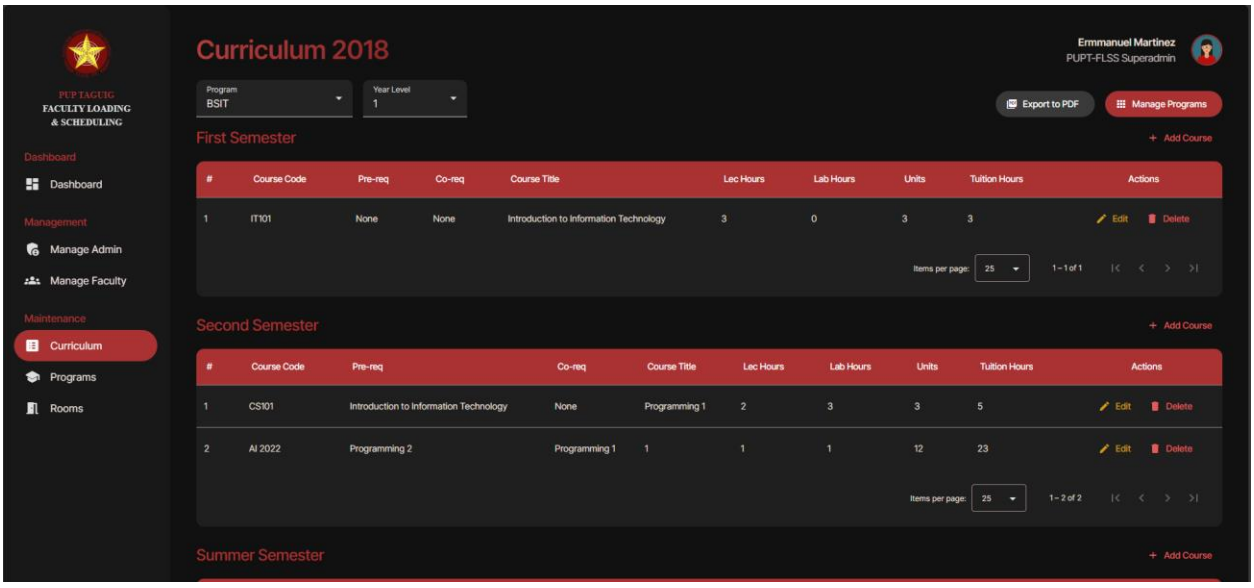


Figure 17. FLS Super Admin, Curriculum & Course Management Page.

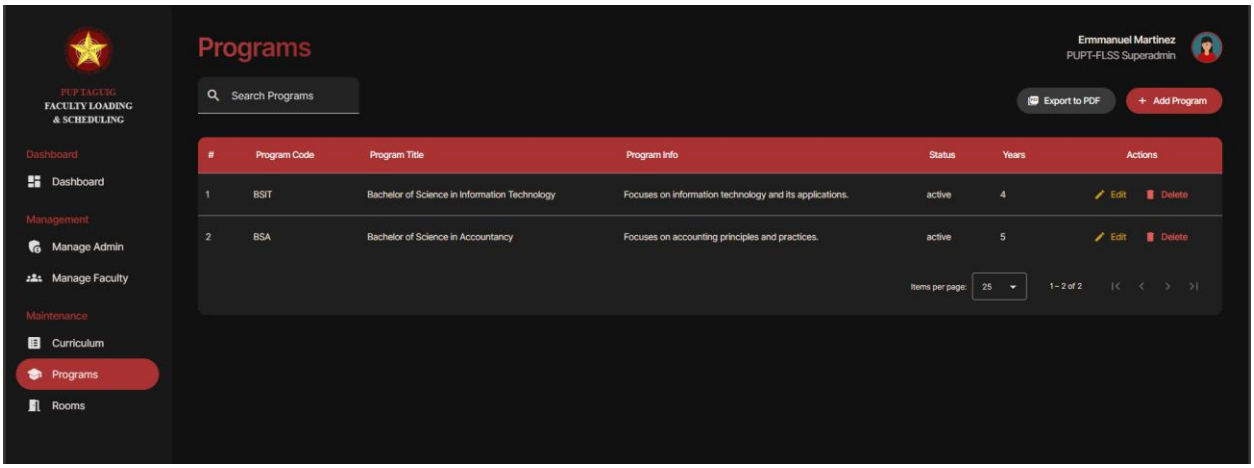


Figure 18. FLS Super Admin, Program Management Page.

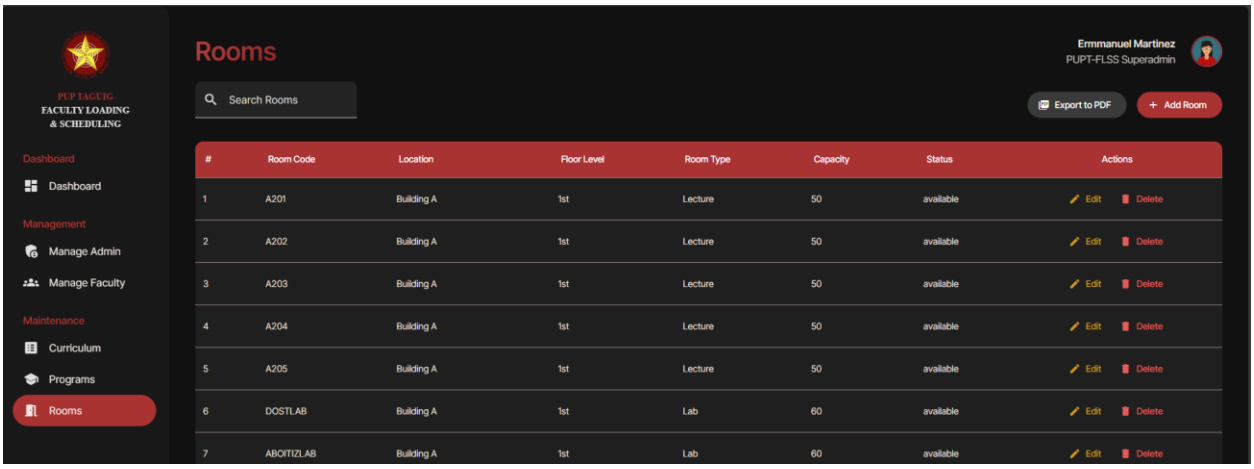


Figure 18. FLS Super Admin, Rooms Management Page.

3. Architectural Strategies

The "PUP Taguig Faculty Loading and Scheduling System" employs a modern architectural framework that integrates various technologies to ensure a robust and efficient system. The primary framework utilized for the backend development is the Laravel Framework, a powerful PHP framework known for its elegant syntax and expressive capabilities. Laravel follows the Model-View-Controller (MVC) design pattern, which effectively separates the application's logic into distinct components, enhancing maintainability and scalability.

For the frontend development, the system leverages Angular, a popular framework for building dynamic web applications. Angular provides a responsive and interactive user interface, allowing faculty members and administrators to navigate the system seamlessly.

The system utilizes MySQL as its Relational Database Management System (RDBMS) to store essential data, ensuring reliable data management and easy access for users. XAMPP is employed as the local server environment for development and testing, providing a comprehensive package that includes Apache, MySQL, and PHP.

For deployment, the system is hosted on Hostinger, ensuring that the application is accessible online and can handle user requests efficiently. This combination of technologies and strategies creates a cohesive and effective architecture for the PUP Taguig Faculty Loading and Scheduling System, facilitating improved faculty workload management and class scheduling processes.

4. System Architecture

4.1 Structure and Relationships

4.1.1 Platform

- Must at least work on any computer with a stable internet connection.

4.1.2 Operating System

- Must at least work on any operating system.

4.1.3 Software

- Must at least work in any modern web browser.

4.1.4 Hardware

- Required hardware specification for client side: Intel Pentium III / AMD equivalent (800 MHz), 1 GB of RAM, and 500MBs of available disk space.

4.2 Proposed System Architecture

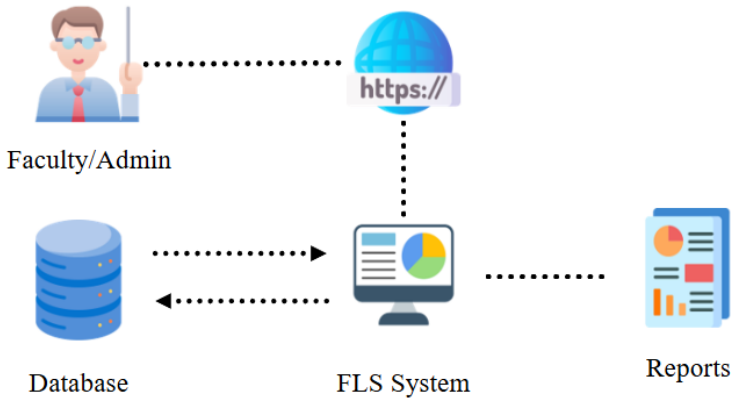


Figure 19. Proposed System Architecture

4.3 Component Table Description

The information below provides a fundamental outline of the architecture and the purpose of the main components of the "PUP Taguig Faculty Loading and Scheduling System":

- **Server Software**: The server software will utilize XAMPP for the local server environment, facilitating the development and testing of the application by providing an integrated package that includes Apache, MySQL, and PHP.
- **Client Software**: The client software consists of computers and smartphones that access the system. The front-end will be built using Angular, providing a responsive and dynamic user interface that will offer various features to assist faculty members and administrators in managing and submitting their teaching assignments and schedules. It will also enable users to automatically generate reports as needed, enhancing the overall user experience.
- **Database**: MySQL, accessed through phpMyAdmin, will serve as the system's database management system. It will store all relevant tables and critical data necessary for the operation of the system, ensuring efficient data retrieval and management for faculty loading and scheduling processes.

4.4 Functions of the System

Faculty Member Account

Security	
Login	Enables users to log into their accounts within the system
Logout	Enables users to log out and terminate access to the system.
Homepage	
Tabs	Enables users to navigate and access links to various modules within the system.
Profile	Allows users to view their profile
Modules	
Set Preference	Allows user to create and set preferred course and schedule
Load & Schedule	Enable user to view their designated schedule
Reports	Allow users to access reports from HAP that provide relevant context on loading and scheduling details
Generate	Allows users to generate reports in an pdf format.

Admin Account

Security	
Login	Enables users to log into their accounts within the system
Logout	Enables users to log out and terminate access to the system.
Homepage	
Tabs	Enables users to navigate and access links to various modules within the system.
Profile	Allows users to view their profile
Settings	

Set Active Academic School Year	Allows the admin to set active Academic School Year

Set Active Curriculum	Allows the admin to set active Academic Curriculum in Specific Program and Year Levels
Set Active Section	Allows the admin to set active Section in Specific Academic Year, Program and Year Levels
Edit Active Curriculum	Allows the admin to edit list of Academic Curriculum in Specific Program and Year Levels
Loading And Scheduling	
Faculty Loading and Scheduling	Allows the admin to review and select Faculty to handle specific course, program and section.
Faculty Loading and Scheduling Reports	Allows the admin to generate reports base on created Loading and Scheduling information

Super Admin Account

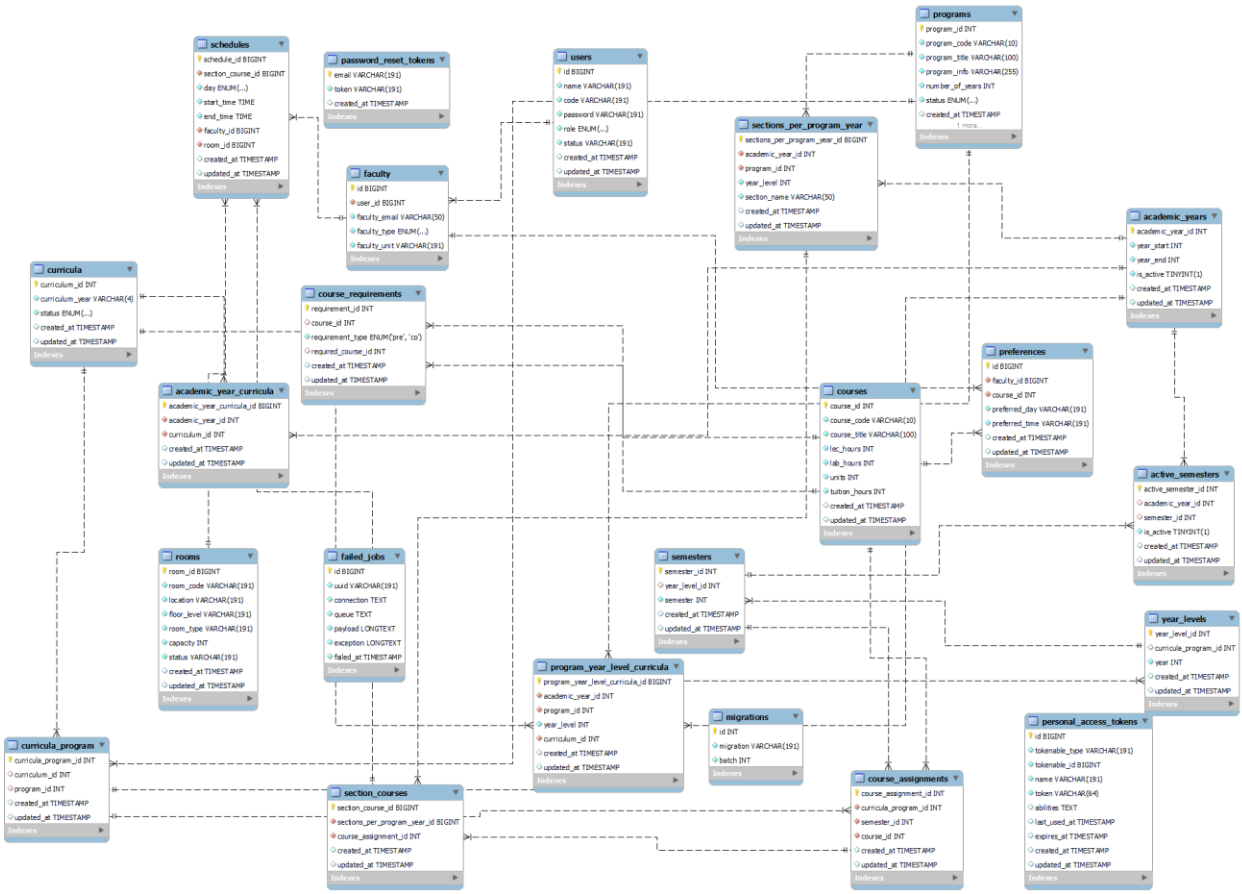
Security	
Login	Enables users to log into their accounts within the system
Logout	Enables users to log out and terminate access to the system.
Homepage	
Tabs	Enables users to navigate and access links to various modules within the system.
Profile	Allows users to view their profile
Settings	
Curriculum Management	Allows the super admin to View, Add, Edit, Delete on curriculum

Course Management	Allows the super admin to set and load courses in specific curricula that have specific program, year levels and semesters

Program Management	Allows the super admin to manage view, add, edit, delete program
Room Management	Allows the super admin to manage view, add, edit, delete sections
Edit Active Curriculum	Allows the admin to edit list of Academic Curriculum in Specific Program and Year Levels
Reports	
Curricula Report	Allows the super admin to generate curricula report in pdf format
Courses Report	Allows the super admin to generate load courses in specific curricula that have specific program, year levels and semesters in pdf format
Program Report	Allows the super admin to generate program report in pdf format
Section Report	Allows the super admin to generate section report in pdf format

5. Design Schema

5.1 Tables, Fields and Relationships



6. Glossary

Term/Acronym	Definition
Faculty Loading	The process of assigning teaching responsibilities and workloads to faculty members based on their qualifications, availability, and institutional requirements.

Laravel Framework	A popular PHP framework used for building web applications, known for its elegant syntax and adherence to the Model-View-Controller (MVC) architectural pattern.
Angular	A front-end web application framework developed by Google, used for building dynamic and responsive user interfaces for web applications.
MySQL	An open-source relational database management system (RDBMS) that uses Structured Query Language (SQL) for managing and retrieving data
XAMPP	A free and open-source cross-platform web server solution stack package that includes Apache, MySQL, PHP, and Perl, used for developing and testing web applications locally.
Model-View-Controller (MVC)	A software architectural pattern that separates an application into three interconnected components: the model (data), the view (user interface), and the controller (business logic), promoting organized code and separation of concerns