LKC FES SYLLABUS MANAGEMENT PORTAL

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A project report submitted in partial fulfilment of the requirements for the award of Bachelor of Science (Honours) Software Engineering

Lee Kong Chian Faculty of Engineering and Science
Universiti Tunku Abdul Rahman

September 2023

DECLARATION

I hereby declare that this project report is based on my original work except for citations and quotations which have been duly acknowledged. I also declare that it has not been previously and concurrently submitted for any other degree or award at UTAR or other institutions.

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Date : 4th October 2023

APPROVAL FOR SUBMISSION

I certify that this project report entitled **LKC FES SYLLABUS MANAGEMENT PORTAL** was prepared by **TANG ZI WENG** has met the required standard for submission in partial fulfilment of the requirements for the award of Bachelor of Science (Honours) Software Engineering at Universiti Tunku Abdul Rahman

Approved by,

Signature : 

Supervisor : Dr Sugumaran a/l Nallusamy

Date : 4th October 2023

Signature :

Co-Supervisor :

Date :

ACKNOWLEDGEMENTS

I'd like to take a moment to express my heartfelt gratitude to everyone who contributed to the successful completion of this project. It's essential to acknowledge the pivotal role played by my supervisor, Dr. Sugumaran a/l Nallusamy, whose guidance and boundless patience were instrumental throughout the entire project's development.

I also want to extend my sincere thanks to my project moderator, Dr. Faranak Nejati, whose invaluable advice greatly improved the quality of my work.

Beyond the academic sphere, I owe a debt of gratitude to my loving parents and friends who provided unwavering support and encouragement throughout this journey. Their belief in me was a constant source of motivation.

I would be remiss not to mention the respondents who willingly participated in the survey questionnaire. Your valuable insights were indispensable. I'm also grateful to my supervisor for assisting with the user acceptance test and evaluating the final web application.

Lastly, I'd like to thank Universiti Tunku Abdul Rahman (UTAR) for granting me the opportunity to undertake this final year project. The experience has been incredibly enriching, and I've gained a wealth of priceless knowledge and practical insights along the way.

ABSTRACT

The LKC FES Syllabus Management Portal project addresses the challenges faced by lecturers and staff in the LKC FES Faculty of Engineering and Science by developing a web-based platform for managing course syllabi. The project aims to provide a centralized solution for tracking changes in syllabi, ensuring up-to-date and uniform course materials. The portal offers features such as creating, reviewing, updating, and auditing syllabi, along with archiving and restoring options. By implementing a System Log with timestamps, the portal enables efficient tracking of changes and comparisons between versions. The project employs the Model-View-Controller (MVC) architecture pattern for streamlined development and maintenance.

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LIST OF SYMBOLS / ABBREVIATIONS

UTAR	Universiti Tunku Abdul Rahman
RAD	Rapid Application Development
SDLC	Software development life cycle

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CHAPTER 1

INTRODUCTION

1.1 Introduction

This project aims to address the challenges encountered by the lecturer and staff in LKC FES faculty based on the tracking of the course requirement changes. This project comprises an analysis of the planning, creation, tools, and methods necessary for the effective management of the syllabus management portal. There will also be a thorough discussion on how to implement and use the syllabus management portal.

1.1.1 Syllabus Management Portal

In today's fast-paced world, managing syllabi can be challenging for educational institutions, particularly for large programs with numerous courses and instructors. The primary source of information for students about their courses, including the goals, expectations for learning, tasks, and grading, is the syllabus. As we previously discussed, syllabus management is the process of developing, updating, and maintaining course syllabi. It entails making sure the course syllabus is current, uniform across courses, and adheres to the norms and regulations established by the institution. Syllabi maintenance can take a lot of time and lead to inconsistent syllabus designs, which can be confusing for both lecturers and staff that utilize the syllabi management to make course changes and for students.

Educational institutions are increasingly relying on technology to simplify syllabus management and enhance student contact in order to address these issues. Syllabus management portals are online platforms that allow faculty members to create, store, update, and share syllabi. These portals provide a centralized location for syllabus storage, version control, and analytics. They will make it simpler for teachers to update curricula and guarantee that every student has access to the most recent edition.

According to the Bureau of Indian Education (www.bie.edu, n.d.), by enabling teachers to develop courses, deliver instruction, foster communication and collaboration among students, assess student success, and provide other learning resources for support, they claimed that learning management systems help schools maintain the integrity of their educational programs effectively and efficiently. Nowadays, the syllabus management portal provides valuable insights into student engagement and learning outcomes, as well as the faculty members such as lecturers and officers. The syllabus management portal eliminates the need for faculty members to manage syllabi manually to store a centralized location for syllabus storage on multiple devices.

1.1.2 System Logs

System logs offer a priceless window into the status of a complicated system in both the present and the past (Waters et al., 2004). A system log is a record of events that occur on a computer system, including changes, messages, and other valuable information. System logs are essential for system administrators to monitor and troubleshoot issues that may arise within a computer system. That being said, a system log helps in managing and maintaining a computer system, as well as tracking changes in events that occur within a computer system. It records a timestamp for each event, allowing users to view a chronological history of system activity. By applying a system log in a computer system, users can identify the changes made by other users. Additionally, a system log can be configured to record a specific type of event to monitor suspicious activity and detect security threats quickly.

1.2 Problem Statement

1.2.1 Lack of a centralized platform

A web portal is a gateway or single access point to resources on the internet. It can be seen as the hub which connects all the related entities from a single location (Ramakrishnan, 2010). According to the words mentioned by Ramakrishnan, a portal serves as a centralized platform to provide a unified and personalized experience by aggregating content from various sources and

presenting it in an interface. As a result, a centralized platform is crucial for centralizing users within a management system to facilitate the tracking of changes in multiple course syllabi. Based on the survey responses, several lecturers expressed a preference for a role-based centralized system. In addition, they have indicated that utilizing a system to manage course syllabus changes would be simpler than using Microsoft Word or Excel. Hence, it will be better to perform the changes to the course syllabus with a centralized syllabus management system.

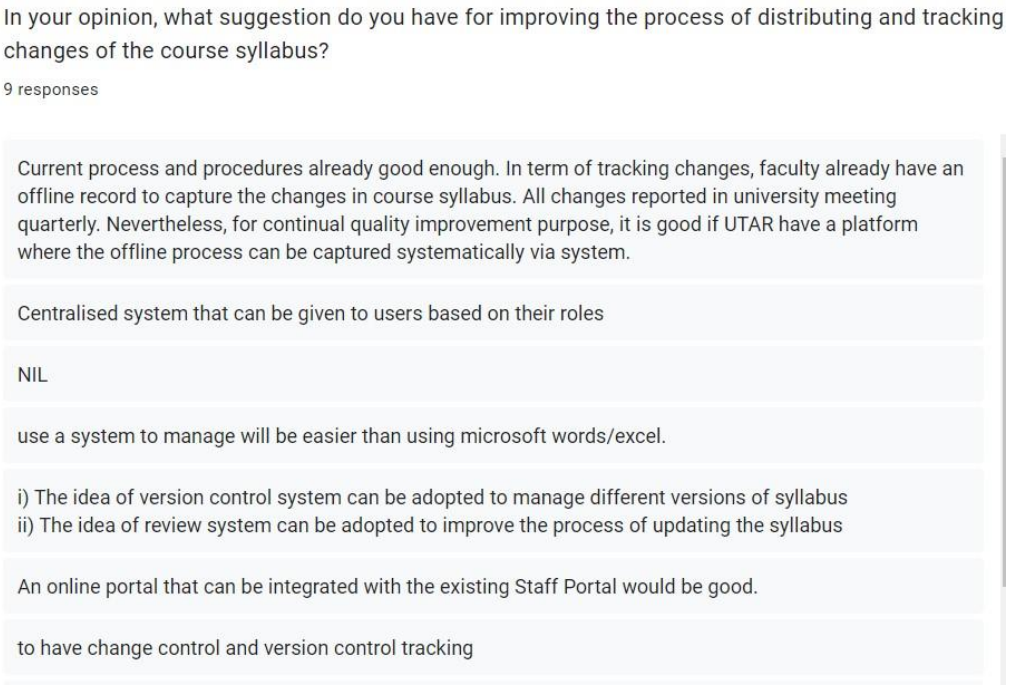


Figure 1.1 Opinion from LKC FES faculty members

1.2.2 Unable to keep track of the changes in the course syllabus

Keeping track of course requirements can be a difficult task for users such as the lecturer and staff, particularly when there are changes or updates to the syllabus or course materials. This might lead to confusion between the users. Appropriately, it might be inefficient for them to update the distributed syllabi. Students might suffer in getting the latest information from lecturers since the latest syllabus has been delayed.

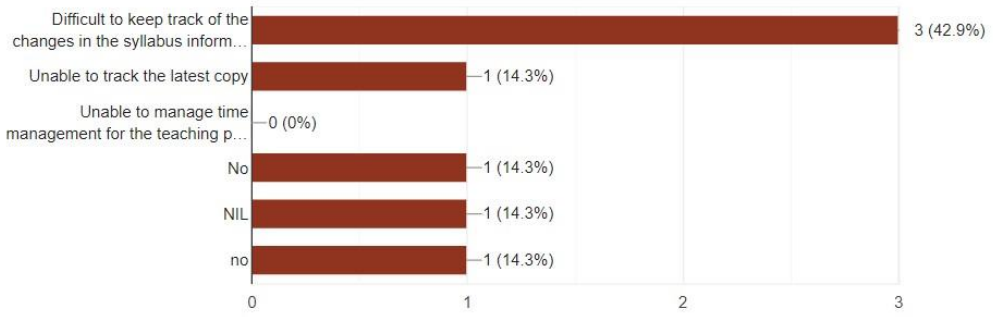


Figure 1.2 Result of voting the difficulty faced by faculty members

1.2.3 Unable to track the latest copy of the course syllabus

The difficulty of tracking the latest copy can be trouble for teachers, and administrators alike. It might be challenging for them to stay up to date with the latest requirements when multiple courses need to be managed. Lecturers and administrators will have trouble maintaining consistency in the course materials if they are not able to keep track of the latest syllabus. There will be wasted time if people involved spend a lot of time figuring out how to keep track of the latest syllabus, it will affect other tasks, such as lesson planning, grading, etc.

1.3 Aim and Objectives

- Identify the problems faced by the lecturers and officers based on the tracking of the course requirement changes.
- Develop a web-based management portal for managing the course syllabi.
- Evaluate the web-based application by conducting tests.

1.4 Proposed Approach

Due to the difficulty in tracking the latest copy of the course syllabus, a Google Form survey is necessary to investigate the issue. The survey, titled "Survey of LKC FES Syllabus Management Portal," will target lecturers and staff members responsible for managing changes to course materials. The survey will begin with questions related to the organization and layout of the courses, followed by inquiries about overall satisfaction with the syllabus. The next section will focus

on the challenges encountered while using the course syllabus. Finally, respondents will be asked to provide suggestions for improving the process of distributing and tracking changes to the course syllabus.

The focus on the development process will be adopted with the software development life cycle (SDLC) to achieve clearly defined inputs and outputs through a step-by-step process.

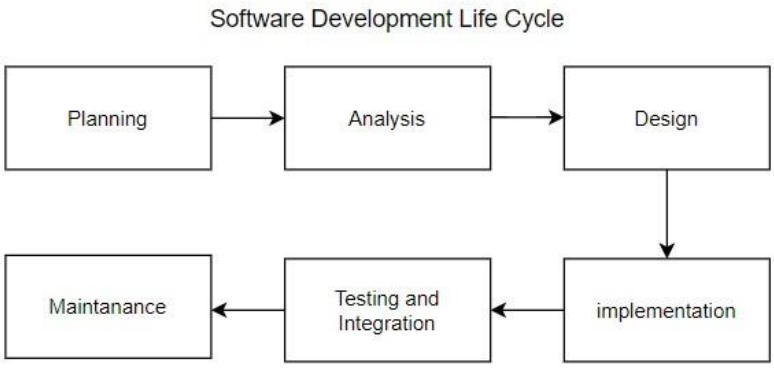


Figure 1.3 Software development life cycle

1.5 Scope of Project

This project aims to create a user-friendly web-based application for managing course syllabi. The application functions as a platform accessible through any internet browser. In this portal, four main functions will involve include creating, viewing, updating, and auditing logs. These functions are designed to assist lecturers, administrators, and staff in keeping track of the latest course syllabus.

1. Create a new course syllabus

Users can easily create course syllabi in the portal and share them with others in course management. The portal will provide a template (CRF template) for users to insert the course materials. The details of the course syllabus can be saved and stored in the database.

2. Review the created course syllabus

In this portal, a review function is provided. Whenever users need to revise the course materials, this portal will display the existing course syllabus that is stored inside the database. This ensures that users always have access to the most up-to-date materials.

3. Update the details in the course syllabus

An update function is provided when users want to amend the existing course syllabus. Once users have done the amendment, the portal will store it inside the database.

4. Archive and restore the course syllabus

This portal allows user (staff) to archive course syllabi if the course syllabus is no longer used. In case the user (staff) archives the course syllabus accidentally, the user (staff) can find the archived course syllabus in the archived course syllabus list. All the archived course syllabi can be restored by clicking the restore button.

5. Audit log to keep track of the changes in the course syllabus

This portal features a history function that allows users to keep track of any edits made to the course materials. This feature provides a useful reference for tracking changes and ensuring that users have access to the latest version of the syllabus. When users are willing to compare the changes between the latest and older course syllabus, the portal will display the record of the latest version compared to the previous course syllabus. By providing clear and concise information, this portal eliminates confusion and makes it easier for users to manage course syllabi.

6. Export the course syllabus

The course syllabus may be exported from our platform using a simple, convenient approach. This function makes it possible for users to quickly

exchange or upload course syllabi, fostering interaction and cooperation between teachers and students. Syllabi may be quickly and easily converted to PDF files, making it much easier to communicate and distribute important instructional material.

1.6 Project Solution

To design a user-friendly interface for this project, HTML will be used as the foundation language. CSS will then be utilized to enhance the visual aesthetics of the user interface. For the virtual server, Wamp Server will be implemented, which is a Windows web development platform that includes an Apache2 server, PHP scripting language, and MySQL language database. A code editor, Visual Studio Code given its powerful developer tooling and enhanced support for web technologies in order to like HTML, CSS, and JSON. The open-source PHP web application framework, Laravel will be utilized in this project, which follows the Model-View-Controller architecture pattern.

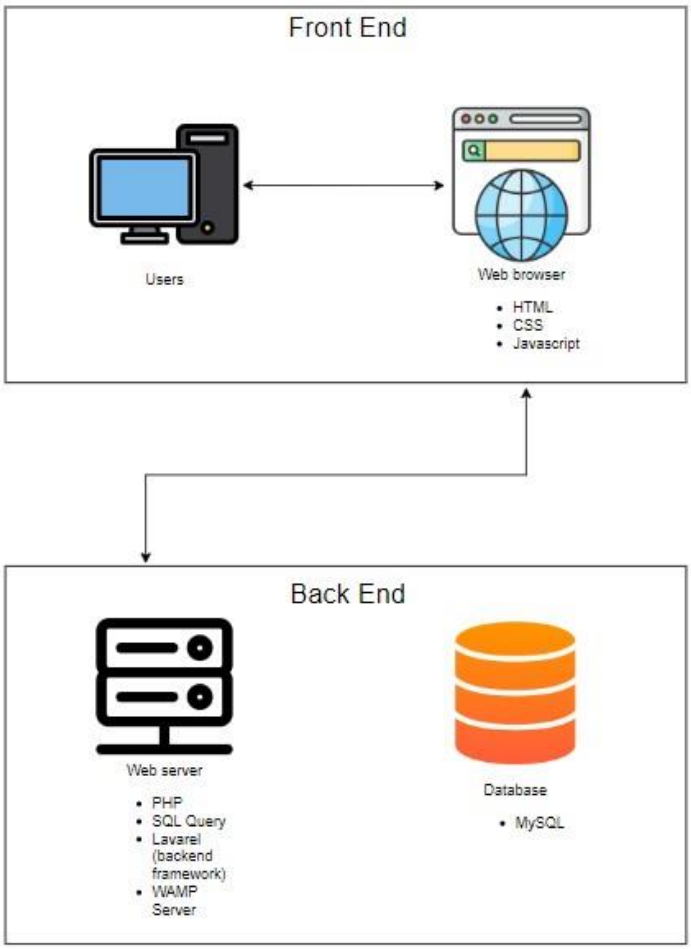


Figure 1.4 MVC architecture design

To effectively track changes in the course syllabus, the system log should record the timestamp of each update to facilitate comparison between the latest and previous versions of the report form (case report form). This can be achieved through the use of a PHP script that is specifically designed to develop a tracking function. By comparing the timestamps of the updates, the portal can accurately determine the changes made to the course syllabus and provide a detailed record of the modifications.

1.6.1 System Architecture Design

This project applies the Modal-View-Controller architecture pattern which allows the separation of the concerns of data management, user interface, and user interaction into distinct layers. According to the figure below provided by CODE Magazine (n.d.), the MVC architecture pattern ensures that each

component of the software can be developed and maintained independently, resulting in a more efficient development process.

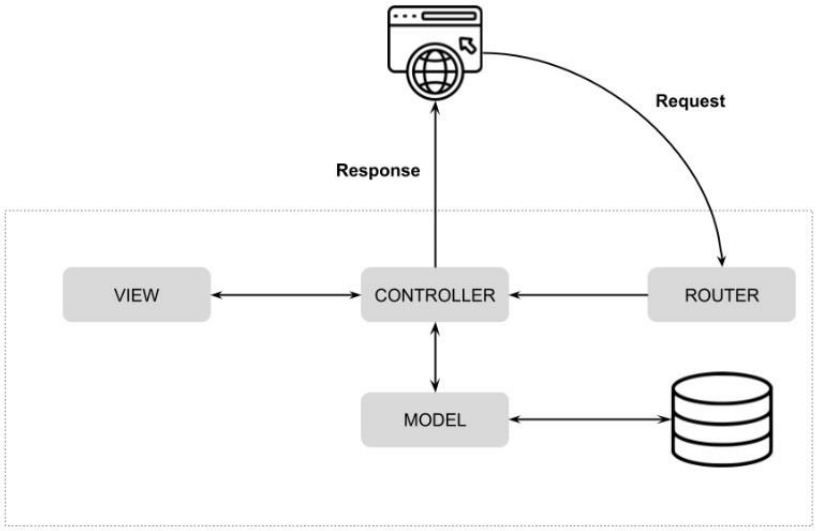


Figure 1.5 System Architecture Design

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

A thorough grasp of the topics involved in developing a syllabus management portal requires doing a literature review. A discussion on the key components, existing sample applications, learning sites, and the reviews on the syllabus management portal have been conducted in the literature review. The reason for this review was to gain more understanding of the development of the syllabus management portal before proceeding to the development phase.

2.2 Syllabus Management Portal

A syllabus management system facilitates the growth, supervision, and exchange of academics' knowledge management practices (Chelvarayan et al., 2011) According to Chelvarayan, a syllabus management system facilitates the development and administration of course syllabi and offers academics a centralized platform for information sharing and collaboration. A unified platform for academics to share knowledge and work together on course materials brings the advantages of a syllabus management portal. This platform supports the creation of best practices for building a culture of knowledge sharing. By collaborating on syllabi, academics are able to learn from one another as well as the development of teaching methods.

In addition, the ability to create and maintain course syllabi is one of the main key components of using a syllabus management platform more easily. The development of a syllabus is an essential part of course design. The goals of the course, the subjects that will be taught, and the assignment information are all laid out in the syllabus. Students could find it difficult to comprehend the course materials without a well-designed syllabus. As the scope of this project, the platform can provide templates for syllabus creation, which ensures the important components are all included.

By enabling academics to examine and contrast the syllabi of various courses and institutions, a syllabus management site may also aid in bettering course preparation. These key components ensure the course content is up-to-date and provide academics with approaches to course design. The addition of an audit log will further enhance the benefits when reviewing the changes to the course syllabus. Furthermore, the process of updating and amending syllabi may be automated, templates for creating syllabi can be provided, and syllabi can be easily customized to suit the requirements of each course.

2.3 Audit log

The audit logs are records that often grade a series of actions or a single activity (Software Reviews, Opinions, and Tips - DNSstuff, 2020). Apart from the statement mentioned by Software Reviews, an audit log can be used to track changes in the activities of the event logs. For example, changes to syllabi and course materials can be recorded in the event log by adding an audit log to a syllabus management portal. Hence, academics can have greater visibility into changes made to syllabi and course materials and ensure that any revisions or updates are made in a timely and accurate manner.

Several security-related goals, such as individual responsibility, event reconstruction, intrusion detection, and problem analysis, can be achieved with the use of audit trails (Nist.gov, 2020). Audit logs benefit organizations, particularly in the realm of security. By recording user actions, audit logs can determine who carried out a certain action, when it was carried out, and what modifications were made. Investigating events, locating malicious activity, and enforcing security regulations are all possible using this data.

According to Waters, a number of characteristics of a secure audit log identified the important properties of a secure audit log.

- **TAMPER RESISTANCE**

  A secure audit log must be impenetrable to tampering; it must ensure that only the log's creator can add legitimate entries and that they cannot be changed once they are added, they cannot be changed.

- **VERIFIABILITY**

  A secure audit log must also be verified, making it feasible to confirm that all of the entries are accurate and unedited.

- **DATA ACCESS CONTROL AND SEARCHABILITY**

  An audit log's data must be encrypted since it can include sensitive information.

An audit log is critical for ensuring the integrity and reliability of the log. The accuracy and use of the log may be jeopardized if tamper-resistant safeguards were not in place since it was conceivable for unauthorized users to make false entries or edit existing entries. Strong encryption must be used to secure the log, preventing unauthorized users from seeing or altering it and ensuring only authorized users can view or modify it. Additionally, only a selected group of individuals with the legitimate need to view or modify it.

Another crucial need for a safe audit log is verifiability. It is feasible to verify that all entries in the audit log are present and unaltered by using a verifiable audit log. This is critical to ensure that the log is trustworthy and can be relied upon to accurately reflect system activities.

Other crucial factors for a safe audit log include data access restriction and searchability. An audit log’s content must be encrypted to prevent unauthorized access since the information contained inside it may be sensitive. The log should

only be accessible to a small number of people who have the legitimate need to view or alter it. The record should also be searchable to make it simpler to locate and examine particular occurrences or actions.

2.3.1 Differences between System Log and Audit Log

There might be some differences between the audit log and the system log. Since both of them are used to keep a record, however, there are slight differences and differences in objectives.

Category	Security Audit Log	System Log
Objective	Records security-related information that can be used to re-establish a series of events (such as failed login attempts or transaction beginnings).	Records information that may indicate a problem with the system (for example, database read errors and rollbacks).
Audience	Auditors	System administrators
Flexibility of Use	You can enable and disable the security audit log as needed. You are not required to audit your system daily. For example, you may enable the security audit log before a planned audit and disable it in between examinations.	The system log is required on an ongoing basis. You do not turn off the system log.

Log Availability	Audit logs are local logs that are kept on each application server. However, unlike the system log, audit logs are kept daily and must be archived or deleted manually. You may now refer to logs from prior days, and the period for available logs has been extended.	System logs are classified as either local or central. On each application server, local logs are kept. These files are circular, which means they are rewritten from the beginning once they are full. These logs have restricted sizes and are only available for a limited time. You can keep a central log. However, the central log is not totally platform agnostic at the moment. It can currently only be
		maintained on a UNIX platform. The primary log is not stored forever either.
Handling of Sensitive Data	Contains personal information that may be subject to data protection laws. Before you activate the security audit log, you must pay particular attention to data protection rules.	It contains no personal information.

Table 2.1 Differences between system log and audit log

A syllabus management portal's audit log is made to concentrate on security-related actions and events, such as access control settings, failed login attempts, and updates to course syllabi. The main objective of the audit log is to document and keep track of the specific changed content. This information is significant for investigating security incidents, monitoring compliance, and detecting

anomalies. On the other hand, system logs in a syllabus management portal will more focus on the technical events and activities related to the system. For example, resource usage, system errors, or software updates are the primary purpose of the system logs. It is to record the technical information related to the system's performance and errors, including the failures and problems that need to be fixed by IT professionals and system administrators.

When it comes to tracking changes in a syllabus management portal, an audit log is more appropriate than a system log. This is due to the audit log offering a thorough record of all syllabus modifications, including who changed them and when. This data is crucial for monitoring and maintaining the integrity of course syllabi, which is essential for ensuring academic quality and compliance with regulations. Hence, an audit log is more suitable to develop in a syllabus management portal.

2.4 Existing Sample Application

The review of the existing sample application of the syllabus management portal aims to highlight the distinctions between the open-source syllabus management portal and the one now in use in UTAR LKC FES Faculty.

2.4.1 UTAR Portal

The UTAR portal acts as a centralized web-based platform that allows UTAR students, teachers, staff, and other stakeholders access to a range of online services and information. This portal typically requires login credentials, once logged in, users can access a number of features and functionalities depending on their roles and permissions. UTAR portal includes some common features such as online submission, administrative services, announcements, news, library, resources, etc.

A UTAR portal is offered in order to view the academic details. Users will first login to the portal with the login ID and password.

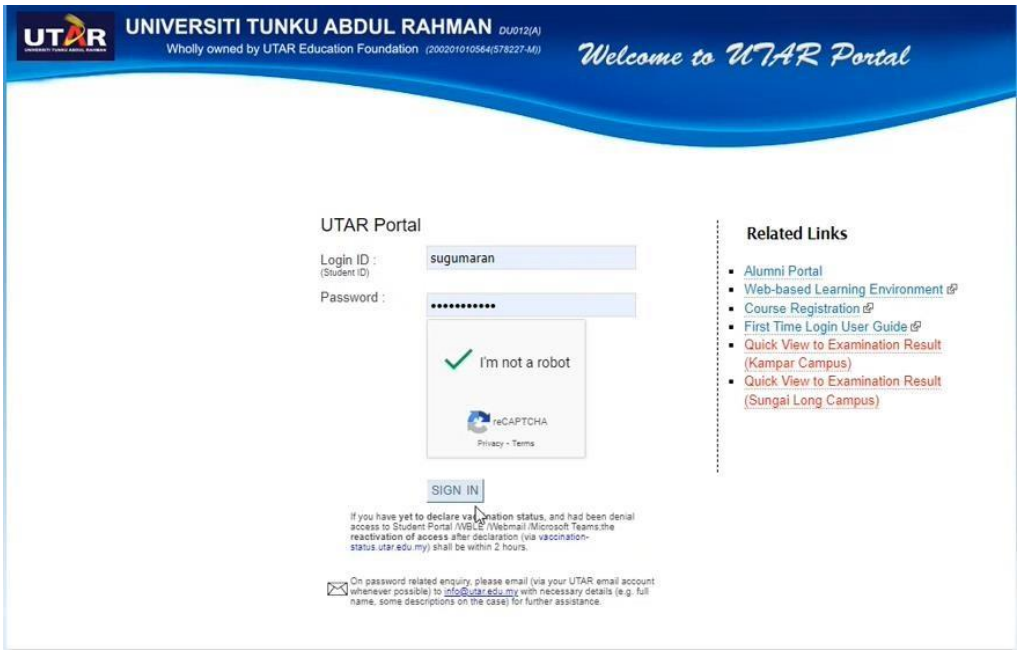


Figure 2.1 Utar portal login page

Once users successfully log in to the page, the portal will show the functions will different dropdown tables. When users click on the program structure button, the portal will redirect to the review of the program structure page.

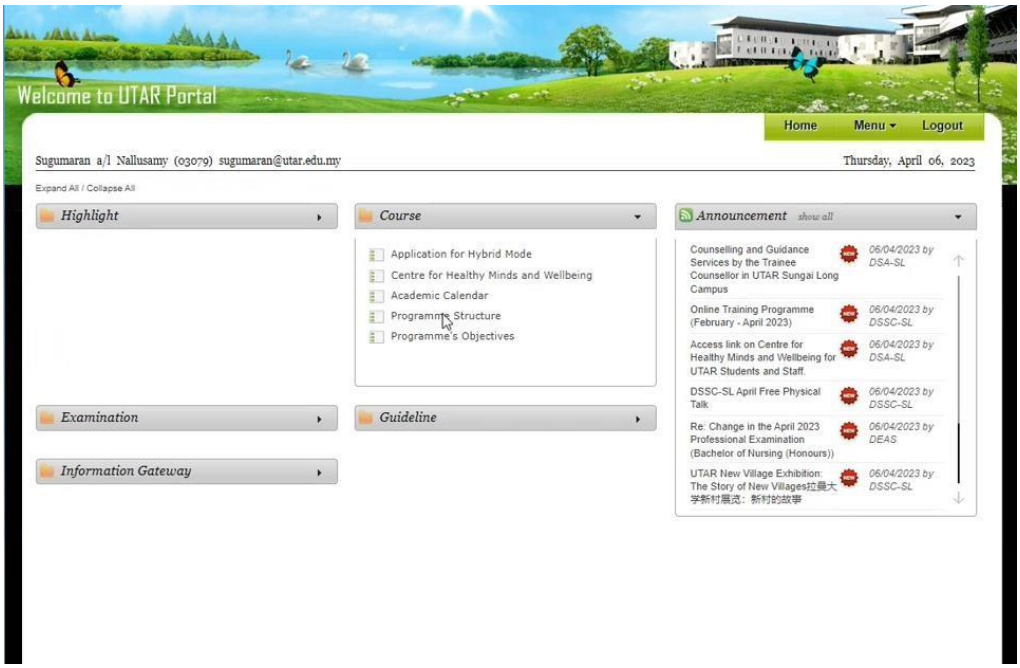


Figure 2.2 Home page of UTAR Portal

Users are allowed to search the course syllabus by selecting the degree level, faculty, and program/ stream/ group. The result will be shown once users click on the show structure button.

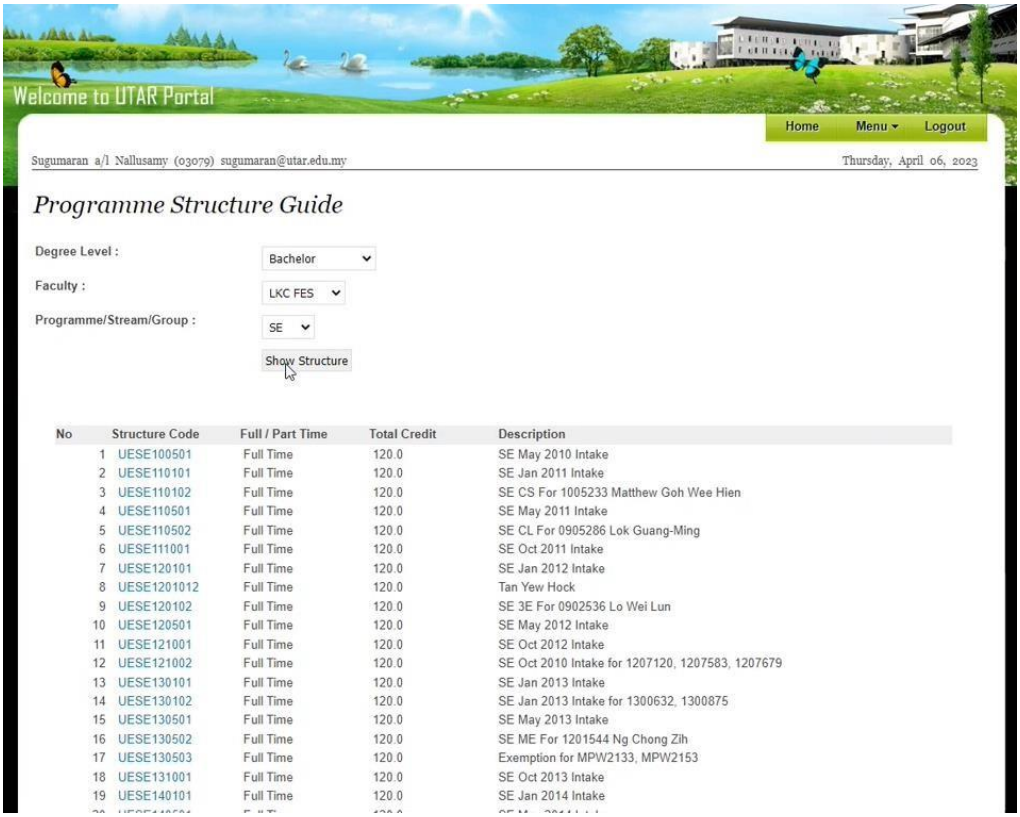
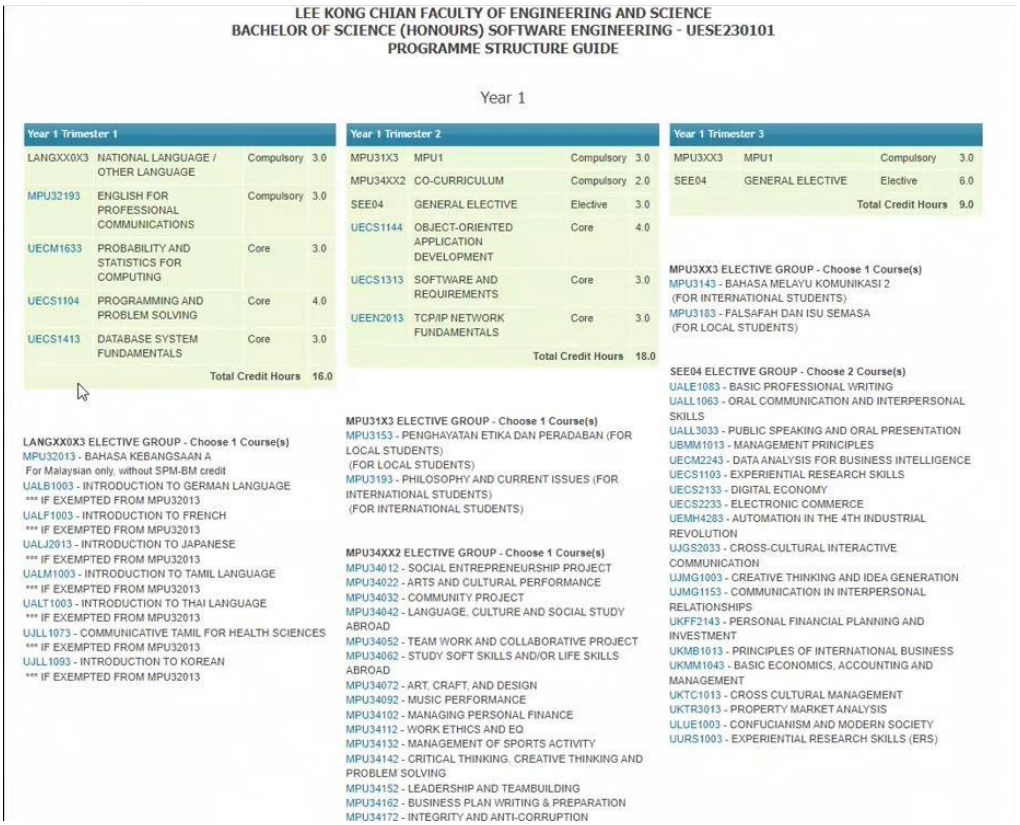


Figure 2.3 Search function of course syllabus in UTAR Portal

A view of the program structure is displayed once users select the specific program structure.



LEE KONG CHIAN FACULTY OF ENGINEERING AND SCIENCE
BACHELOR OF SCIENCE (HONOURS) SOFTWARE ENGINEERING - UESE230101
PROGRAMME STRUCTURE GUIDE

Year 1

Year 1 Trimester 1			
LANGXX0X3	NATIONAL LANGUAGE / OTHER LANGUAGE	Compulsory	3.0
MPU32193	ENGLISH FOR PROFESSIONAL COMMUNICATIONS	Compulsory	3.0
UECM1633	PROBABILITY AND STATISTICS FOR COMPUTING	Core	3.0
UECS1104	PROGRAMMING AND PROBLEM SOLVING	Core	4.0
UECS1413	DATABASE SYSTEM FUNDAMENTALS	Core	3.0
		Total Credit Hours	16.0

Year 1 Trimester 2			
MPU31X3	MPU1	Compulsory	3.0
MPU34XX2	CO-CURRICULUM	Compulsory	2.0
SEE04	GENERAL ELECTIVE	Elective	3.0
UECS1144	OBJECT-ORIENTED APPLICATION DEVELOPMENT	Core	4.0
UECS1313	SOFTWARE AND REQUIREMENTS	Core	3.0
UEEN2013	TCP/IP NETWORK FUNDAMENTALS	Core	3.0
		Total Credit Hours	18.0

Year 1 Trimester 3			
MPU3XX3	MPU1	Compulsory	3.0
SEE04	GENERAL ELECTIVE	Elective	6.0
		Total Credit Hours	9.0

LANGXX0X3 ELECTIVE GROUP - Choose 1 Course(s)
MPU32013 - BAHASA KEBANGSAAN A
For Malaysian only, without SPM-BM credit
UALB1003 - INTRODUCTION TO GERMAN LANGUAGE
*** IF EXEMPTED FROM MPU32013
UALF1003 - INTRODUCTION TO FRENCH
*** IF EXEMPTED FROM MPU32013
UALJ2013 - INTRODUCTION TO JAPANESE
*** IF EXEMPTED FROM MPU32013
UALM1003 - INTRODUCTION TO TAMIL LANGUAGE
*** IF EXEMPTED FROM MPU32013
UALT1003 - INTRODUCTION TO THAI LANGUAGE
*** IF EXEMPTED FROM MPU32013
UJLL1073 - COMMUNICATIVE TAMIL FOR HEALTH SCIENCES
*** IF EXEMPTED FROM MPU32013
UJLL1093 - INTRODUCTION TO KOREAN
*** IF EXEMPTED FROM MPU32013

MPU31X3 ELECTIVE GROUP - Choose 1 Course(s)
MPU3153 - PENGHAYATAN ETIKA DAN PERADABAN (FOR LOCAL STUDENTS)
(FOR LOCAL STUDENTS)
MPU3193 - PHILOSOPHY AND CURRENT ISSUES (FOR INTERNATIONAL STUDENTS)
(FOR INTERNATIONAL STUDENTS)

MPU34XX2 ELECTIVE GROUP - Choose 1 Course(s)
MPU34012 - SOCIAL ENTREPRENEURSHIP PROJECT
MPU34022 - ARTS AND CULTURAL PERFORMANCE
MPU34032 - COMMUNITY PROJECT
MPU34042 - LANGUAGE, CULTURE AND SOCIAL STUDY ABROAD
MPU34052 - TEAM WORK AND COLLABORATIVE PROJECT
MPU34062 - STUDY SOFT SKILLS AND/OR LIFE SKILLS ABROAD
MPU34072 - ART, CRAFT, AND DESIGN
MPU34092 - MUSIC PERFORMANCE
MPU34102 - MANAGING PERSONAL FINANCE
MPU34112 - WORK ETHICS AND EQ
MPU34132 - MANAGEMENT OF SPORTS ACTIVITY
MPU34142 - CRITICAL THINKING, CREATIVE THINKING AND PROBLEM SOLVING
MPU34152 - LEADERSHIP AND TEAMBUILDING
MPU34162 - BUSINESS PLAN WRITING & PREPARATION
MPU34172 - INTEGRITY AND ANTI-CORRUPTION

MPU3XX3 ELECTIVE GROUP - Choose 1 Course(s)
MPU3143 - BAHASA MELAYU KOMUNIKASI 2
(FOR INTERNATIONAL STUDENTS)
MPU3183 - FALSAFAH DAN ISU SEMASA
(FOR LOCAL STUDENTS)

SEE04 ELECTIVE GROUP - Choose 2 Course(s)
UALE1083 - BASIC PROFESSIONAL WRITING
UALL1063 - ORAL COMMUNICATION AND INTERPERSONAL SKILLS
UALL3033 - PUBLIC SPEAKING AND ORAL PRESENTATION
UBMM1013 - MANAGEMENT PRINCIPLES
UECM2243 - DATA ANALYSIS FOR BUSINESS INTELLIGENCE
UECS1103 - EXPERIENTIAL RESEARCH SKILLS
UECS2133 - DIGITAL ECONOMY
UECS2233 - ELECTRONIC COMMERCE
UEMH4283 - AUTOMATION IN THE 4TH INDUSTRIAL REVOLUTION
UJGS2033 - CROSS-CULTURAL INTERACTIVE COMMUNICATION
UJMG1003 - CREATIVE THINKING AND IDEA GENERATION
UJMG1153 - COMMUNICATION IN INTERPERSONAL RELATIONSHIPS
UKFF2143 - PERSONAL FINANCIAL PLANNING AND INVESTMENT
UKMB1013 - PRINCIPLES OF INTERNATIONAL BUSINESS
UKMM1043 - BASIC ECONOMICS, ACCOUNTING AND MANAGEMENT
UKTC1013 - CROSS CULTURAL MANAGEMENT
UKTR3013 - PROPERTY MARKET ANALYSIS
ULUE1003 - CONFUCIANISM AND MODERN SOCIETY
UURS1003 - EXPERIENTIAL RESEARCH SKILLS (ERS)

Figure 2.4 List of Programme Structure

Users are allowed to view the details of the course syllabus. However, users are not allowed to edit the details of the course syllabus, meaning that users are unable to track the latest copy of the course syllabus and they will not notice the changes of the course syllabus. It is hard to keep track of the changes in each course syllabus.

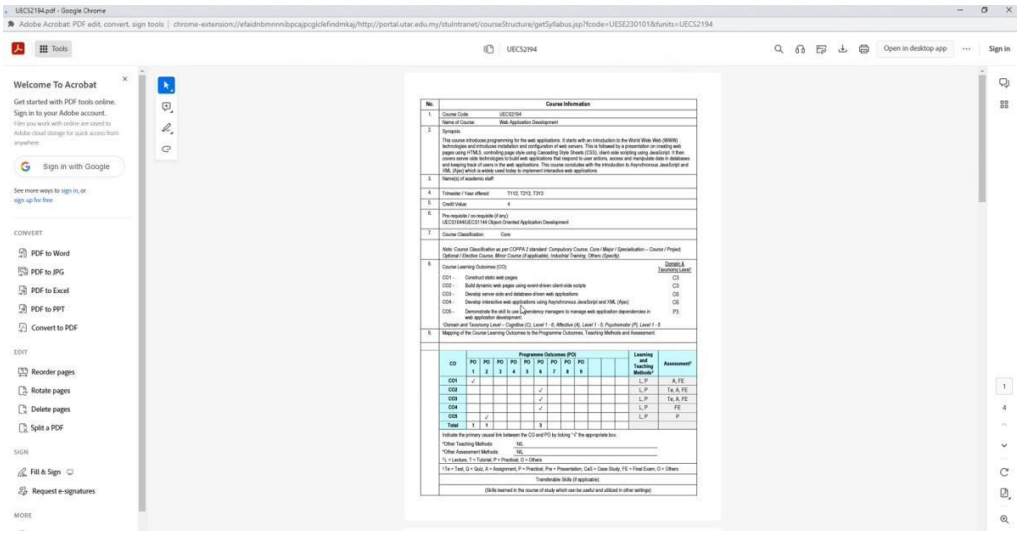


Figure 2.5 View of the course syllabus

2.4.2 Kuali Curriculum Management

Kuali Curriculum Management is a software system designed to assist educational institutions in managing their own curricula. Kuali Curriculum Management offers a variant of features and functionality in order to help manage its curriculum. The features of Kuali Curriculum Management included:

- Curriculum creation
- Course and program catalog management
- Course and program assessment
- Curriculum mapping
- Reporting and analysis
- Integration with other systems
- Audit trail for tracking changes

Kuali Curriculum Management allows the user to manage their course syllabi most simply. All basic features are provided in order to assist the management of the course syllabi.

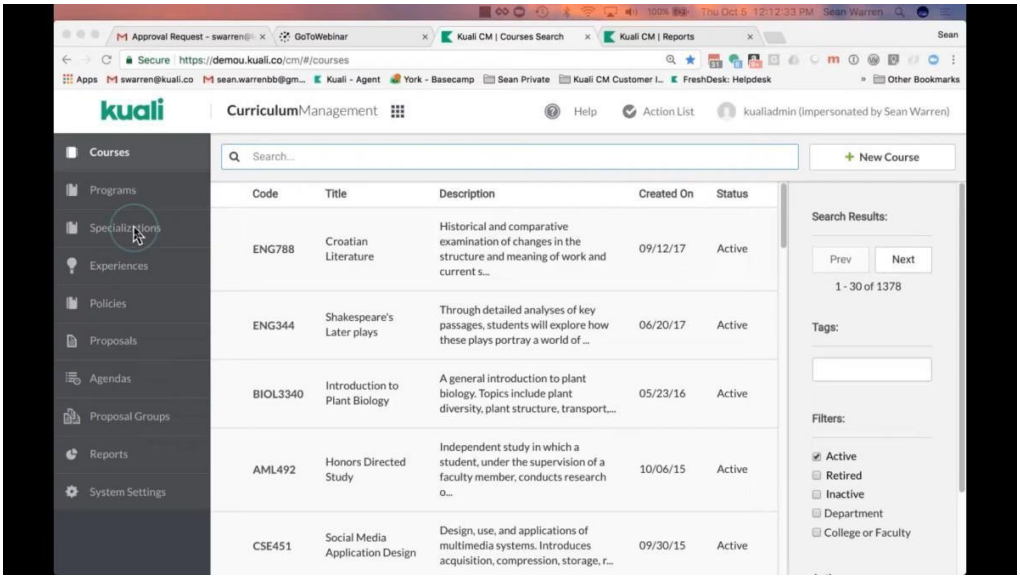


Figure 2.6 Kuali Curriculum Management Overview

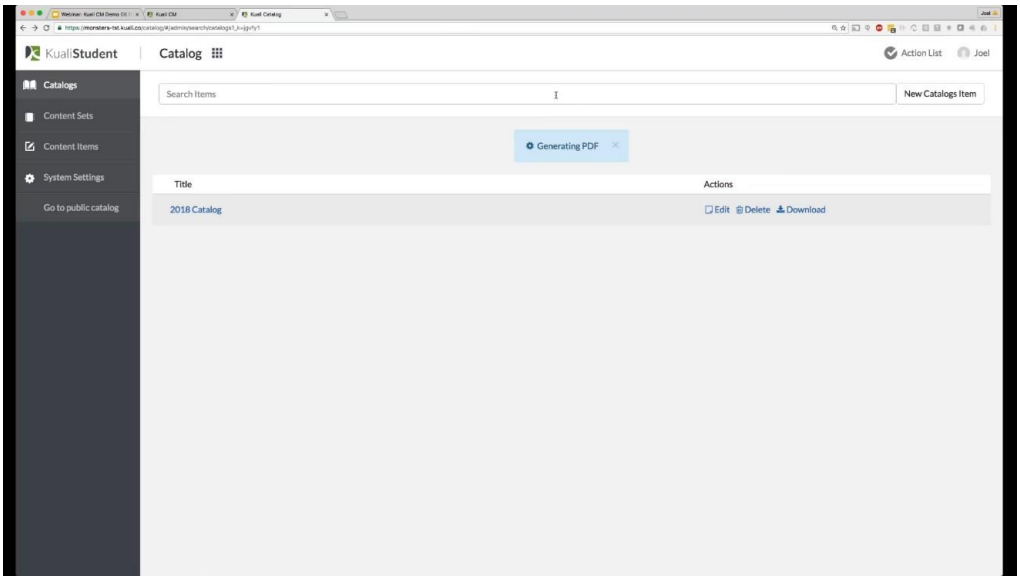


Figure 2.7 Update and edit functions in Kuali

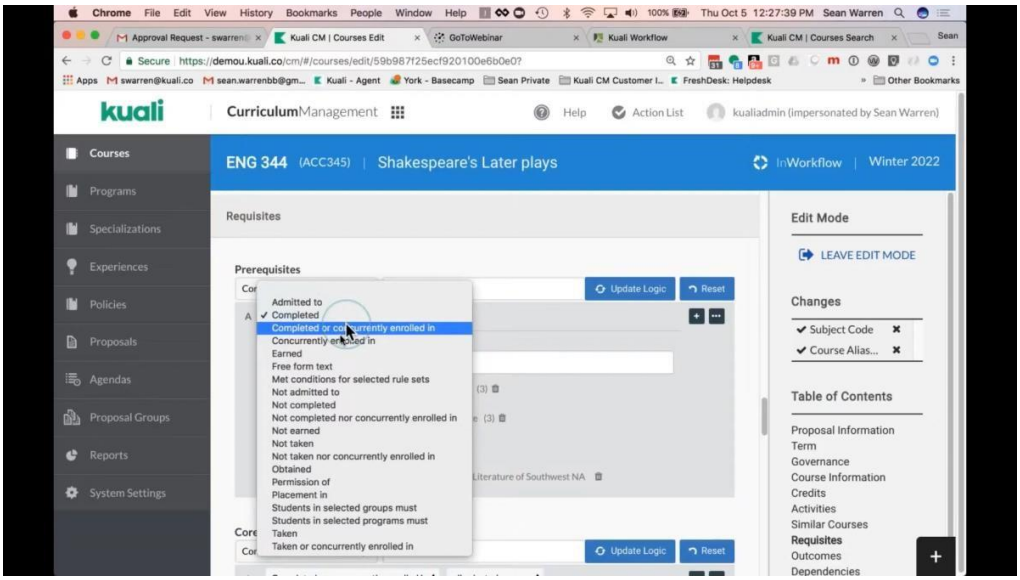


Figure 2.8 Workflow Tracker in Kuali Management Curriculum

2.4.3 CourseDog

For higher education institutions, CourseDog is a comprehensive academic operation platform that optimizes and streamlines the scheduling and management of courses and classes. It provides a full range of tools and features to streamline the difficult course scheduling process and raise the efficacy and efficiency of academic operations.

The features of CourseDog include:

- Automated course scheduling
- Demand-driven course and class creation
- Resource management
- Analytics and Reporting
- Integration with other systems
- Tools for optimizing course scheduling
- Streamlining of academic operation

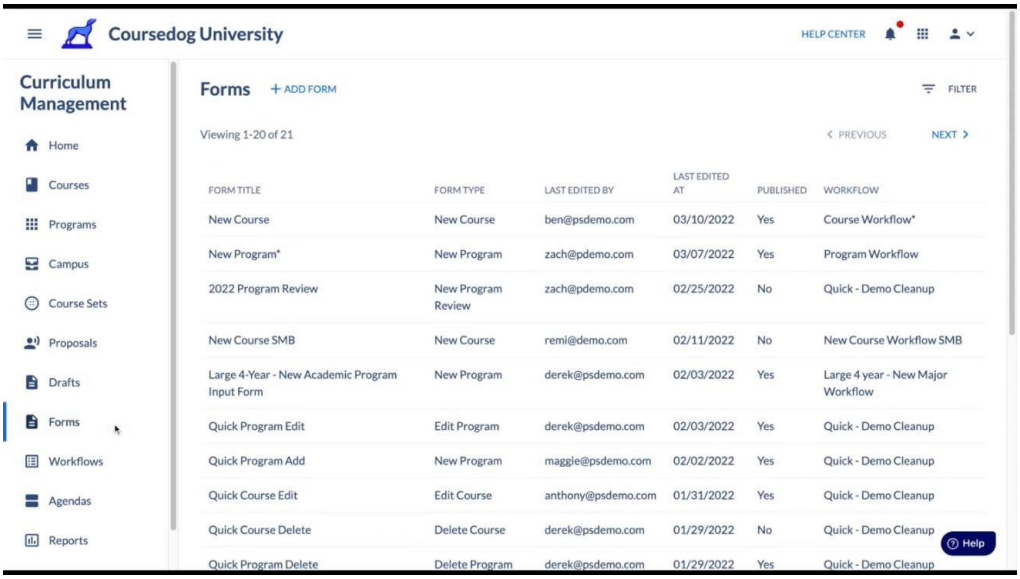


Figure 2.9 The interface of CourseDog

In CourseDog, users are allowed to undergo the CRUD operation will includes the create, read, update, and delete functions to improve the efficiency of managing the course syllabi and academic institutions.

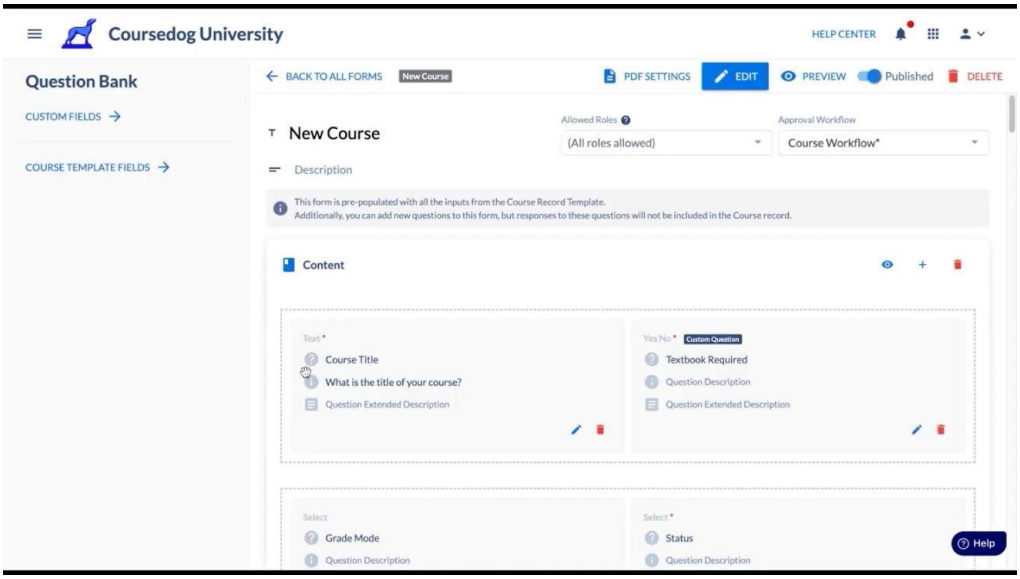


Figure 2.10 Create course function in CourseDog

The thorough audit trail allows users to see details about any change made so users will no longer have to dig through old emails or stacks of papers to figure out when and why something was updated.

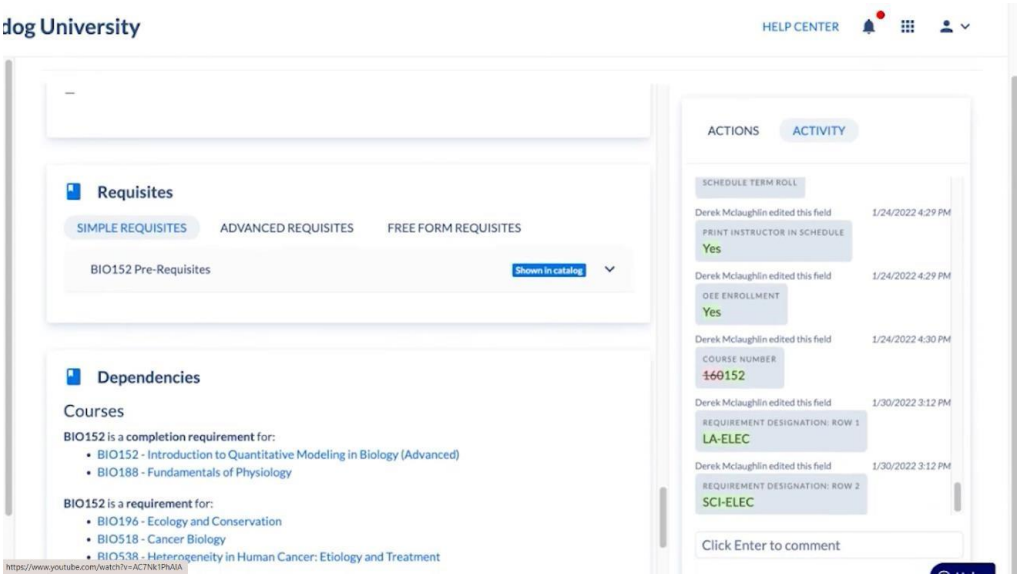


Figure 2.11 Audit trails in CourseDog

2.4.4 Conclusion

Features	UTAR Portal	Kuali Curriculum Management	CourseDog
Student Information System	Yes	Yes	No
Online Learning Management System	Yes	No	Yes
Administrative Services	Yes	Yes	Yes
Announcement and News	Yes	No	Yes
Communication and Collaboration Tools	Yes	No	Yes
Course syllabus creation	No	Yes	Yes
Course syllabus review	Yes	Yes	Yes
Online submission	Yes	Yes	Yes
Course and Program Management	No	Yes	Yes
Course Syllabus Mapping	No	Yes	Yes

Course Syllabus Search Function	Yes	Yes	Yes
Integration with Other Systems	No	Yes	Yes
Audit Trail	No	Yes	Yes

Table 2.2 Comparison of features and functionality

Based on the features listed in the table, while all three systems offer various features, Kuali Curriculum Management and CourseDog offer more thorough capabilities for managing the curriculum, including creating, reviewing, and mapping syllabi as well as integrating them with other systems and the audit trail capability.

By comparing the features offered by this three-management portal, a few numbers of features need to be implemented in the syllabus management portal. A CRUD operation (create, read, update, and delete) is essential to a syllabus management portal. By creating course syllabi within the management portal, faculty or other authorized users can access and arrange the course material such as the objectives, assessments, and other pertinent. This promotes the accuracy and uniformity of course syllabi and aids in the administration and planning of the curriculum. The review feature ensures compliance with institutional policies, curriculum standards, and accreditation requirements. Hence, maintaining quality control and consistency in course offerings is secure. Course syllabi may need to be updated periodically to reflect the changes in course content. The ability to update the syllabi within the management portal ensures the most current and accurate information is available to faculty. If the course syllabi are outdated or obsolete course syllabi from the system, a deletion feature is needed to remove the irrelevant course syllabi.

Apart from the CRUD operation, a search functionality serves as a supporting tool that enables users to access specific course syllabi in a shortened period. Faculty, administrators, and other users can save time and effort by efficiently retrieving and referencing syllabi thanks to this. Last but not least, an audit trail. It keeps track of all changes made to course syllabi, including when the changes were made and what changes were made. This offers a clear record of all changes and aids in accountability, compliance, and problem-solving if there are any problems or disagreements with syllabus revisions. Without the audit trail feature, it becomes challenging to track and identify the changes to course syllabi, leading to potential confusion or misunderstanding, or even difficulty in resolving disputes.

2.5 Comparison of Development Methodology

An information system's development process is organized, scheduled, and managed using a software development methodology (Davu, 2015). There are many types of software methodology such as the following methodologies, Rapid Application Development (RAD), Agile development methodology, DevOps deployment methodology, and the Waterfall development method. These methodologies were evaluated based on their characteristics and the comparison between each methodology.

2.5.1 Rapid Application Development

In situations of relatively low cost, rapid application methodology enables the quick creation of information systems from the design phase to completion (Anon., n.d.). RAD is a software development process that puts a high emphasis on cooperation between developers, business stakeholders, and end users while focusing on swiftly and iteratively developing software applications.

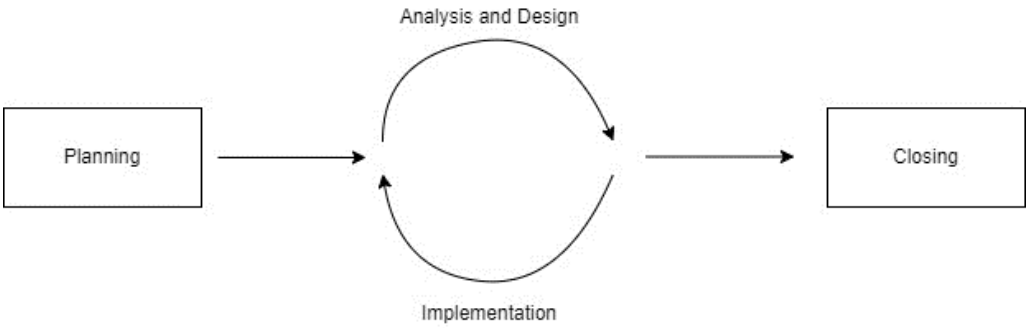


Figure 2.12 RAD Model

The requirements planning, user analysis and design, implementation, and closing phases make up the four stages of the rapid application development methodology. Up until the user certifies that the product satisfies all criteria, the user analysis and design phases and implementation phases are repeated. Rapid application development succeeds with a well-defined business aim, and a specified user group, and is not computationally demanding. Time-sensitive small to medium-sized projects benefit the most from Rapid Application Development. However, highly skilled developers are required as an essential in a condensed development timeline that requires approval after each construction phase.

2.5.2 Agile Development Methodology

Iterative improvement and opportunistic development procedures are the foundation of agile methods, which are a subset of iterative and evolutionary methods (Laurie, 2007). A technique for agile development aids in lowering the risk associated with mistakes, overruns in the budget, and changing customer demands. Agile development approaches are used by teams as they create the software in small increments of new functionality.

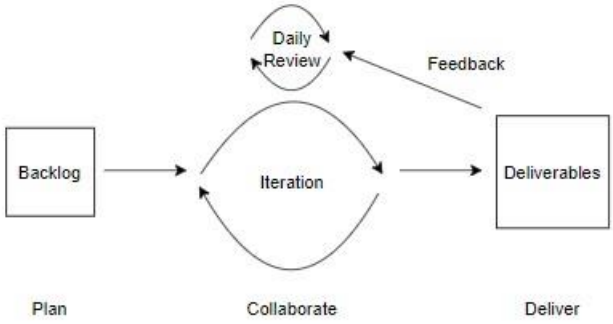


Figure 2.13 Agile Model

Agile software development's key benefit enables iterative software releases. By enabling teams to find and fix problems quickly and establish expectations early on, iterative releases boost productivity. However, this development method only relies on real-time communication; it requires time commitment because developers must finish each feature inside each iteration for user approval.

2.5.3 DevOps Deployment Methodology

In order to increase efficiency, the DevOps deployment technique aims to integrate development, quality assurance, and operations into one continuous set of tasks (Battina, Sindhu, and Sr, n.d.). This approach entails a series of steps that support preserving an organizational culture. This approach puts a lot of emphasis on organizational change, which enhances communication between the departments in charge of different development life cycle phases of the development life cycle.

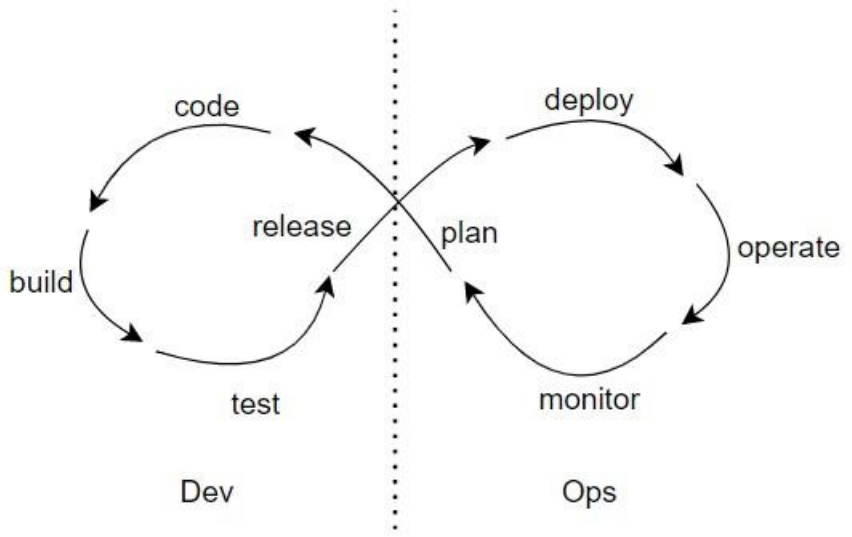


Figure 2.14 DevOps Deployment Methodology

DevOps aids in accelerating the delivery of new features and bug fixes by automating the software development process (M, 2022). Said DevOps provides automated testing and continuous deployment to improve the quality of software quality by making it simpler to find and solve bugs before they have an impact on production. However, some disadvantages exist such as some customers or industries oppose the continuous updates to their systems because different departments work in various settings, therefore output might be impacted by difficulties that go undiscovered.

2.5.4 Waterfall Development Methodology

A waterfall model consists of several successive stages that flow downward in a waterfall-like fashion. Although these stages might differ, they frequently comprise stages like requirements analysis, program design, coding, testing, and operations (Zhang et al., 2010). The waterfall development methodology is a traditional software development approach that follows a linear and sequential process with distinct phases. Each phase must be completed before moving to the next phase. It is frequently used in a project when needs are specified, stable, and where modifications are anticipated to be few. It places a significant focus on documenting and preparing in advance. The drawbacks of this approach include its limits in terms of adjusting to shifting needs, the possibility for

lengthy development cycles, and potential delays in addressing difficulties that emerge later in the project.

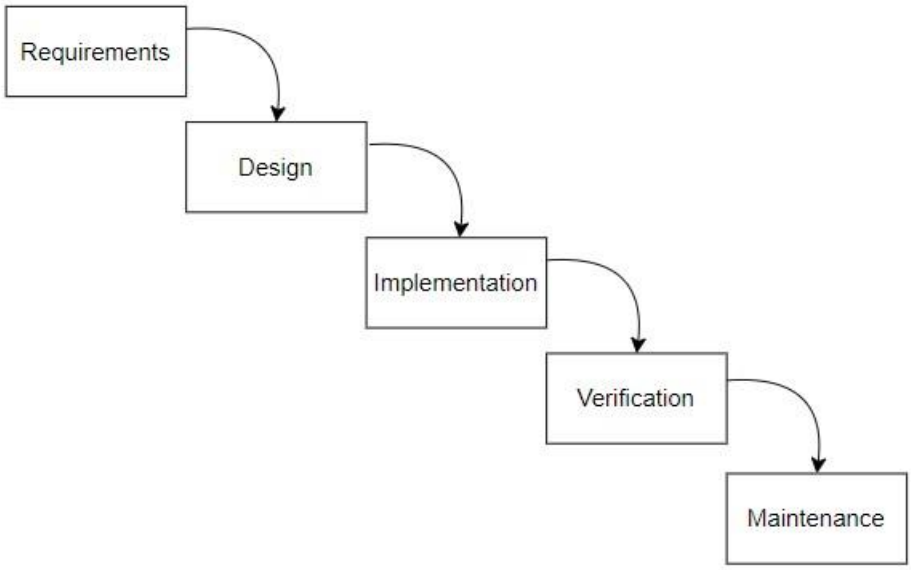


Figure 2.15 Water Development Methodology

2.5.5 Conclusion

Feature	Rapid Application Development	Agile Development methodology	DevOps Development Methodology	Waterfall Development Methodology
Flexibility	High	High	High	Low
Cost	Moderate	Moderate	High	Low
Risk Factor	Moderate	Moderate	Moderate	High
Simplicity	High	High	High	Low
Development Time	Short	Short	Short	Long
Expertise Required	Moderate	High	High	Low
Phase Containment of Error	High	High	High	Low
Success and Failure Ratio	Moderate	High	High	Low
Client Interaction	High	High	High	Low
Time Required	Moderate	Moderate	High	Low
Resource Required	Moderate	Moderate	High	Low

Table 2.3 Comparison between development methodologies

Based on the comparison table between the four development methodologies, Rapid application is preferable to the development of a syllabus management portal. By rapidly creating prototypes and refining them in response to user feedback and requirements, RAD enables you to produce a working solution without delay. This is especially useful for projects requiring a lot of user involvement and customization, like a syllabus administration portal.

Additionally, RAD gives you the ability to control faults throughout each stage of development, lowering your total risk. The focus of RAD on ongoing customer input and engagement guarantees that the finished result satisfies the needs and expectations of the client and end-users.

2.6 Learning Site

Several existing programming learning sites are essential to develop the functionality of a syllabus management portal. The chosen online learning platform for programming will assist with a wide range of topics and give access to a community of students and instructors who can aid and direction during the learning process.

2.6.1 Laravel.com

Laravel is a popular web framework providing coding guidelines and coding practices in Laravel applications. The guidelines in Laravel.com will guide users step by step starting from the installation of the Laravel application. Besides, basic concepts such as routing, middleware, blade templates, and many more will be provided to ensure consistency, maintainability, and security in Laravel applications.

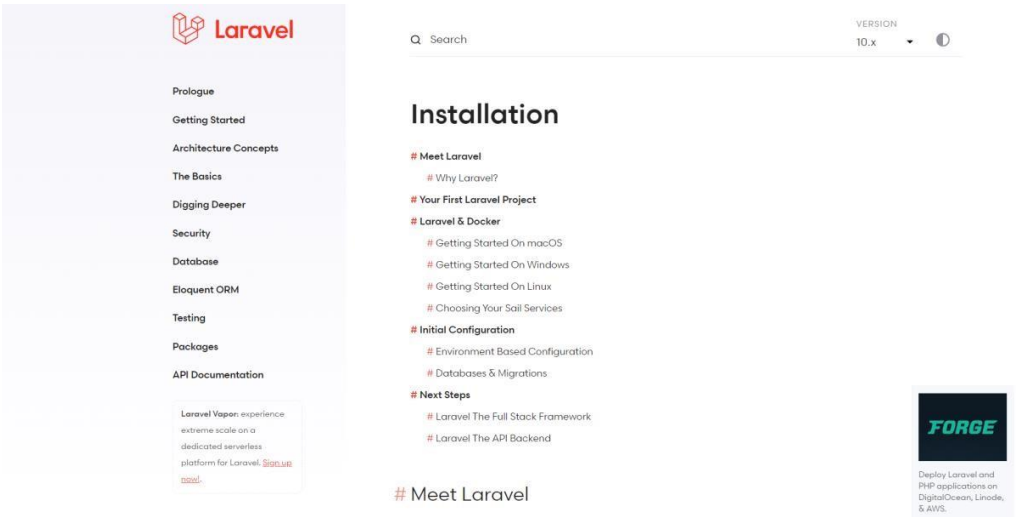


Figure 2.16 Guidelines of Laravel.com

2.6.2 Codecademy

Codecademy, an online learning platform provides interactive coding lessons in a number of different programming languages and technologies. The hands-on learning method offered by Codecademy allows users to create code on a web-based integrated development environment (IDE) and receive instant feedback on it.

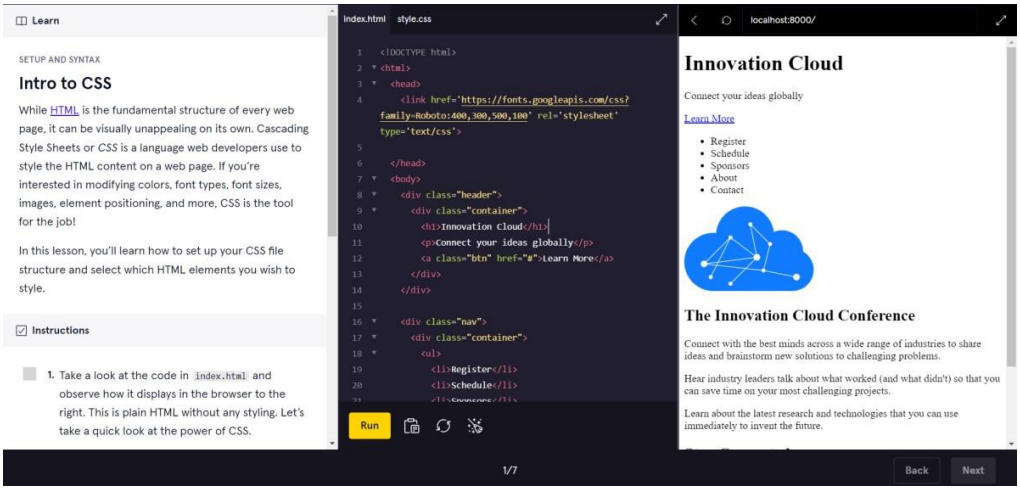


Figure 2.17 The environment for users to code

CHAPTER 3

METHODOLOGY AND WORK PLAN

3.1 Research Methodology

Research methodology is used to gather data and information to answer research questions or test hypotheses. It enables researchers to follow a logical sequence of steps, from identifying research problems to analyzing and interpreting data, ensuring that the study is carried out in a systematic and effective way. Due to the difficulties of keeping track of the changes in the course syllabus, a questionnaire in Google form is used to gain more positive contributions.

Since the dawn of humans, there has been a constant desire to learn why things are the way they are. This desire has led to a great deal of research (Goddard, 2004). The pursuit of knowledge purely for the sake of knowing why an intrinsic part of human nature is and has been a driving force behind many of the greatest achievements and discoveries throughout history. Hence, research methodology would be the best way which leads to credible and valuable research outcomes.

3.1.1 Research Results

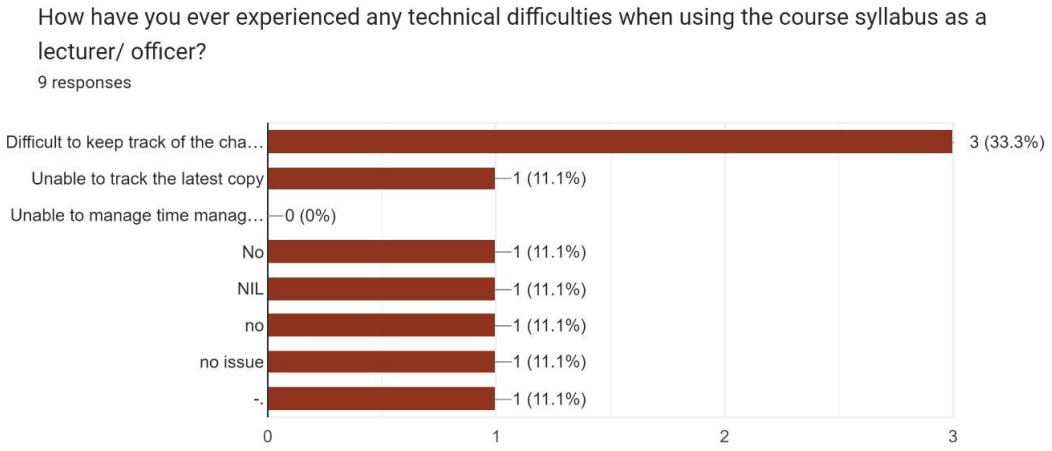


Figure 3.1 Response in Google form

The majority of the respondents stated the difficulty of keeping track of the changes to the course syllabus when managing the course syllabi. The issue arises because the UTAR portal does not provide the audit trails for the changes made to the course syllabus. The details in the course syllabus are difficult to notice when changes are made due to the complexity of the course material, leading to difficulties in tracking the latest copy. The result shows that some of the respondents faced issues with tracking of latest copy and the changes in the course syllabus. However, some of the respondents did not face such issues because they were not involved in changing the details in the course syllabus or were assigned to process the task of creating a new course syllabus. Only the lecturers who are involved in the situation voice their concerns.

- ***To automate the process of updating and distributing syllabi.***
- ***To have change control and version control tracking.***
- ***The visual diagrammatic representation to show the changes according to timeline.***
- ***The idea of version control system can be adopted to manage different version of syllabus.***

- ***The idea of review system can be adopted to improve the process of updating the syllabus.***

The result of the questionnaire found that there is a need for an automated system to manage syllabi. The relevance of change control and the idea of version control tracking was emphasized by respondents as a way to ensure the accuracy of syllabi and always up to date. One of the respondents recommended using visual representations to illustrate changes over time since this action helps in grasping how the syllabus has evolved in a simpler way. Besides, the usage of a version control system has been recommended by the respondents as a key finding from the questionnaire. This feature assists in managing several syllabus versions as it can be challenging to keep track of syllabus changes in big classes or courses with several professors.

Apart from the recommendation of the version control system, the idea of a review system was proposed as a technique to enhance the syllabus update procedure. Before modifications to the syllabus, a review system may assist in verifying the flaws or inconsistencies. This action boosted the syllabus's overall quality and improved the effectiveness of the update process of the course syllabus.

- ***A centralized system that can be given to users based on their roles.***

Some of the respondents also emphasized the importance of user roles to access this syllabus management portal. According to the functionalities that will be developed in this portal, several user categories might be given access to different functions in a centralized system. Administrators have the power to control access rights and run reports, such as the delete function for each created course syllabus. This function would allow the administrator to remove access permissions for specific users or roles as needed, ensuring the security of sensitive course

information. On the other hand, users such as the lecturer or faculty members may be able to alter the course descriptions and syllabi. This kind of customization could ensure that users only have access to the capabilities they require to enhance security and streamline operations at the same time.

- ***Use a system to manage will be easier than using Microsoft Words/ Excel.***
- ***Has some forms using system to allow us easier to change the contents/ updates the contents in course syllabi instead of using Microsoft words.***

Respondent expressed frustration with the usage of managing course syllabi by using Microsoft Word or Excel. Since Microsoft Word and Excel can be time-consuming and challenging to users. Although these programs are frequently used to create and organize documents, they are not intended for maintaining complicated documents like course syllabi. It can be challenging to keep track of updates and changes over time, particularly when several individuals are engaged. In addition, it may be difficult to update the content of the syllabi without a system with forms. By having specified fields and sections to allow the input of the details in the course syllabus, users are able to avoid the mistakes and omissions that may happen while using Microsoft Word or Excel to manage the course materials in the course syllabi.

3.2 Software Development Methodology

Rapid Application Development is selected for the development of a syllabus management portal as it offers several features that match the project development methodology. Due to its emphasis on speed, flexibility, collaboration, and a user-centric approach, RAD methodology shortens the development cycle, enabling the portal to be delivered more quickly. Because of its flexibility, RAD is particularly suited for syllabus management websites as it focuses on rapid prototyping, iterative development, and quick feedback cycles, which can accelerate the development process. As the project needs to be developed within a short period,

RAD enables quick adjustments to the changing requirements and ensures that the portal meets the needs of the users effectively.

In the first phase which is the requirement gathering, the RAD process starts with gathering requirements from all the stakeholders such as lecturers, administrators, and staff management in order to understand their needs and expectations from the syllabus management portal. This entails conducting a questionnaire which helps in gathering the collaborative and iterative approach. Following up with the user design phase, RAD methodology focuses on swiftly prototyping or mocking up the portal user interface and the user experience. Based on the requirements obtained, these prototypes are provided for validation and feedback. Once the user interface and user experience designs have been approved, the actual development of the syllabus management portal takes place. Since RAD methodology focuses on rapid application development, it applies tools and technologies that allow for quick prototyping, coding, and testing. The portal is deployed to a setting that resembles a production environment for last-minute testing and validation after the construction phase is developed completely. The portal will be tested to find the problems or faults that could have gone unnoticed during the development phase.

3.3 Project Work Plan

3.3.1 Work Breakdown Structure (WBS)

1.0 Planning

- 1.1 Project Initiation
- 1.2 Background Study and Research
- 1.3 Requirements Gathering
- 1.4 Identify Problem Statement
- 1.5 Define Project Scope
  - 1.5.1 Identify Target Users
- 1.6 Requirement Gathering
  - 1.6.1 Design Questionnaire
  - 1.6.2 Review Questionnaire
  - 1.6.3 Discuss Questionnaire
  - 1.6.4 Perform Research Questionnaire
- 1.7 Literature Review
  - 1.7.1 Research Similar Topic
  - 1.7.2 Analyse Management Portal
  - 1.7.3 Analyse Audit Log
  - 1.7.4 Compare System Log and Audit Log
  - 1.7.5 Review Existing Applications
  - 1.7.6 Compare Existing Applications
  - 1.7.7 Compare Software Development Methodology
  - 1.7.8 Determine Development Tools and Techniques
  - 1.7.9 Determine Learning Site
- 1.8 Schedule Project
  - 1.8.1 Create Work Breakdown Structure
  - 1.8.2 Predict Project Duration
  - 1.8.3 Create Gantt Chart
  - 1.8.4 Finalise Gantt Chart

2.0 User Analysis and Design

2.1 Design Use Case Diagram

2.2 Design Entity Relation Diagram

2.3 Create Data Dictionary

2.4 Create Use Case Description

2.5 Design Prototype

3.0 Implementation Phase One

3.1 Setup Repository

3.2 Setup Database and Server

3.3 Connection Testing

3.4 Prototype Revision on User Feedback

3.5 Web Application Development

3.5.1 Create Framework

3.5.2 Create Main Page User Interface

3.5.2 Create backend logic for Login Feature

3.5.3 Create Login Interface

3.5.4 Test Login Function

3.5.5 Setup Authenticated User Roles

3.5.6 Test Login Feature with User Roles

4.0 Implementation Phase Two

4.1 Develop CRUD Operation for Course Syllabus

4.3.1 Implement Create Course Syllabus Function

4.3.1.1 Test Create Course Syllabus Function

4.3.2 Implement Review Course Syllabus Function

4.3.2.1 Test Review Course Syllabus Function

4.3.3 Implement Update Course Syllabus Function

4.3.3.1 Test Update Course Syllabus Function

4.3.4 Implement Archive Course Syllabus Function

4.3.4.1 Test Archive Course Syllabus Function

4.2 Develop Audit Log Features

4.2.1 Create Audit Log Interface

3.3.2 Gantt Chart

	Name	Duration	Start	Finish
1	**Planning**	**46.25 days?**	**2/10/23 8:00 AM**	**4/17/23 10:00 AM**
2	Project Initiation	2 days	2/10/23 8:00 AM	2/13/23 5:00 PM
3	Background Study and Research	3 days	2/14/23 8:00 AM	2/16/23 5:00 PM
4	Requirements Gathering	2 days	2/17/23 8:00 AM	2/20/23 5:00 PM
5	Identify Problem Statement	1 day	2/21/23 8:00 AM	2/21/23 5:00 PM
6	**Define Project Scope**	**1 day?**	**2/21/23 8:00 AM**	**2/21/23 5:00 PM**
7	Identify Target Users	1 day?	2/21/23 8:00 AM	2/21/23 5:00 PM
8	**Requirement Gathering**	**7 days**	**2/22/23 8:00 AM**	**3/2/23 5:00 PM**
9	Design Questionnaire	2 days	2/22/23 8:00 AM	2/23/23 5:00 PM
10	Review Questionnaire	1 day	2/24/23 8:00 AM	2/24/23 5:00 PM
11	Discuss Questionnaire	2 days	2/27/23 8:00 AM	2/28/23 5:00 PM
12	Perform Research Questionnaire	2 days	3/1/23 8:00 AM	3/2/23 5:00 PM
13	**Literature Review**	**16 days**	**3/3/23 8:00 AM**	**3/24/23 5:00 PM**
14	Research Similar Topic	3 days	3/3/23 8:00 AM	3/7/23 5:00 PM
15	Analyse Management Portal	3 days	3/8/23 8:00 AM	3/10/23 5:00 PM
16	Analyse Audit Log	2 days	3/13/23 8:00 AM	3/14/23 5:00 PM
17	Compare System Log and Audit Log	2 days	3/15/23 8:00 AM	3/16/23 5:00 PM
18	Review Existing Applications	2 days	3/17/23 8:00 AM	3/20/23 5:00 PM
19	Compare Existing Applications	1 day	3/21/23 8:00 AM	3/21/23 5:00 PM
20	Compare Software Development Methodology	1 day	3/22/23 8:00 AM	3/22/23 5:00 PM
21	Determine Development Tools and Techniques	1 day	3/23/23 8:00 AM	3/23/23 5:00 PM
22	Determine Learning Site	1 day	3/24/23 8:00 AM	3/24/23 5:00 PM
23	**Schedule Project**	**4 days**	**3/24/23 10:00 AM**	**3/30/23 10:00 AM**
24	Create Work Breakdown Structure	1 day	3/24/23 10:00 AM	3/27/23 10:00 AM
25	Predict Project Duration	1 day	3/27/23 10:00 AM	3/28/23 10:00 AM
26	Create Gantt Chart	1 day	3/28/23 10:00 AM	3/29/23 10:00 AM
27	Finalise Gantt Chart	1 day	3/29/23 10:00 AM	3/30/23 10:00 AM
28	**User Analysis and Design**	**12 days**	**3/30/23 10:00 AM**	**4/17/23 10:00 AM**
29	Design Use Case Diagram	2 days	3/30/23 10:00 AM	4/3/23 10:00 AM
30	Design Entity Relation Diagram	2 days	4/3/23 10:00 AM	4/5/23 10:00 AM
31	Create Data Dictionary	2 days	4/5/23 10:00 AM	4/7/23 10:00 AM
32	Create Use Case Description	3 days	4/7/23 10:00 AM	4/12/23 10:00 AM
33	Design Prototype	3 days	4/12/23 10:00 AM	4/17/23 10:00 AM

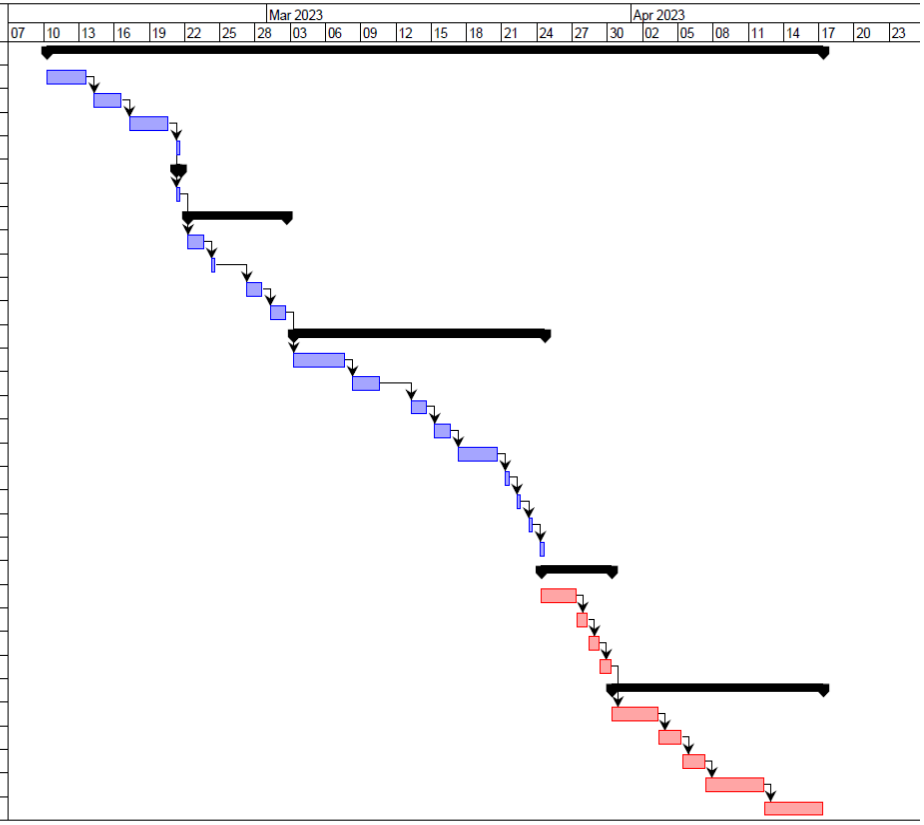


Figure 3.2 Project Gantt Chart (part 1)

	Name	Duration	Start	Finish
1	**Implementation Phase...**	**16 days**	**6/19/23 8:00 AM**	**7/10/23 5:00 PM**
2	Setup Repository	1 day	6/19/23 8:00 AM	6/19/23 5:00 PM
3	Setup Database and Ser...	1 day	6/20/23 8:00 AM	6/20/23 5:00 PM
4	Connection Testing	1 day	6/21/23 8:00 AM	6/21/23 5:00 PM
5	Prototype Revision on U...	1 day	6/22/23 8:00 AM	6/22/23 5:00 PM
6	**Web Application Dev...**	**12 days**	**6/23/23 8:00 AM**	**7/10/23 5:00 PM**
7	Create Framework	2 days	6/23/23 8:00 AM	6/26/23 5:00 PM
8	Create Main Page User...	2 days	6/27/23 8:00 AM	6/28/23 5:00 PM
9	Create backend logic f...	3 days	6/29/23 8:00 AM	7/3/23 5:00 PM
10	Create Login Interface	1 day	7/4/23 8:00 AM	7/4/23 5:00 PM
11	Test Login Function	1 day	7/5/23 8:00 AM	7/5/23 5:00 PM
12	Setup Authenticated U...	2 days	7/6/23 8:00 AM	7/7/23 5:00 PM
13	Test Login Feature wit...	1 day	7/10/23 8:00 AM	7/10/23 5:00 PM
14	**Implementation Phase...**	**25 days**	**7/12/23 8:00 AM**	**8/15/23 5:00 PM**
15	**Develop CRUD Operat...**	**8 days**	**7/12/23 8:00 AM**	**7/21/23 5:00 PM**
16	**Implement Create ...**	**2 days**	**7/12/23 8:00 AM**	**7/13/23 5:00 PM**
17	Test Create Course ...	2 days	7/12/23 8:00 AM	7/13/23 5:00 PM
18	**Implement Review ...**	**2 days**	**7/14/23 8:00 AM**	**7/17/23 5:00 PM**
19	Test Review Course ...	2 days	7/14/23 8:00 AM	7/17/23 5:00 PM
20	**Implement Update ...**	**2 days**	**7/18/23 8:00 AM**	**7/19/23 5:00 PM**
21	Test Update Course ...	2 days	7/18/23 8:00 AM	7/19/23 5:00 PM
22	**Implement Archive ...**	**2 days**	**7/20/23 8:00 AM**	**7/21/23 5:00 PM**
23	Test Archive Course ...	2 days	7/20/23 8:00 AM	7/21/23 5:00 PM
24	**Develop Audit Log Fe...**	**5 days**	**7/24/23 8:00 AM**	**7/28/23 5:00 PM**
25	Create Audit Log Inter...	1 day	7/24/23 8:00 AM	7/24/23 5:00 PM
26	Implement Audit Log F...	3 days	7/25/23 8:00 AM	7/27/23 5:00 PM
27	Test Audit Log Function	1 day	7/28/23 8:00 AM	7/28/23 5:00 PM
28	**Develop Course Sylla...**	**4 days**	**7/31/23 8:00 AM**	**8/3/23 5:00 PM**
29	Create Search Page In...	1 day	7/31/23 8:00 AM	7/31/23 5:00 PM
30	Test Search functions	3 days	8/1/23 8:00 AM	8/3/23 5:00 PM
31	**Develop Audit Log Se...**	**3 days**	**8/4/23 8:00 AM**	**8/8/23 5:00 PM**
32	Create Search Page In...	1 day	8/4/23 8:00 AM	8/4/23 5:00 PM
33	Test Search functions	2 days	8/7/23 8:00 AM	8/8/23 5:00 PM
34	**Create Profile Feature**	**4 days**	**8/9/23 8:00 AM**	**8/14/23 5:00 PM**
35	Create Profile Page Int...	1 day	8/9/23 8:00 AM	8/9/23 5:00 PM
36	Create Filtered Audit L...	2 days	8/10/23 8:00 AM	8/11/23 5:00 PM
37	Test Profile Editing Fea...	1 day	8/14/23 8:00 AM	8/14/23 5:00 PM
38	Combine Developed Fea...	1 day	8/15/23 8:00 AM	8/15/23 5:00 PM
39	**Implementation Phase...**	**11 days**	**8/16/23 8:00 AM**	**8/30/23 5:00 PM**
40	Test System Workflow	1 day	8/16/23 8:00 AM	8/16/23 5:00 PM
41	**Perform Testing**	**2 days**	**8/17/23 8:00 AM**	**8/18/23 5:00 PM**
42	Perform Unit Test	1 day	8/17/23 8:00 AM	8/17/23 5:00 PM
43	Perform User Accepta...	1 day	8/18/23 8:00 AM	8/18/23 5:00 PM
44	Enhance Version Control...	3 days	8/21/23 8:00 AM	8/23/23 5:00 PM
45	Develop Extra Feature f...	3 days	8/24/23 8:00 AM	8/28/23 5:00 PM
46	Enhance the Basic Featu...	2 days	8/29/23 8:00 AM	8/30/23 5:00 PM
47	**Closing**	**11 days**	**8/31/23 8:00 AM**	**9/14/23 5:00 PM**
48	Create Documentation	5 days	8/31/23 8:00 AM	9/6/23 5:00 PM
49	Test System Flow	1 day	9/7/23 8:00 AM	9/7/23 5:00 PM
50	Create Poster	1 day	9/8/23 8:00 AM	9/8/23 5:00 PM
51	Finalize Project Documen...	4 days	9/11/23 8:00 AM	9/14/23 5:00 PM

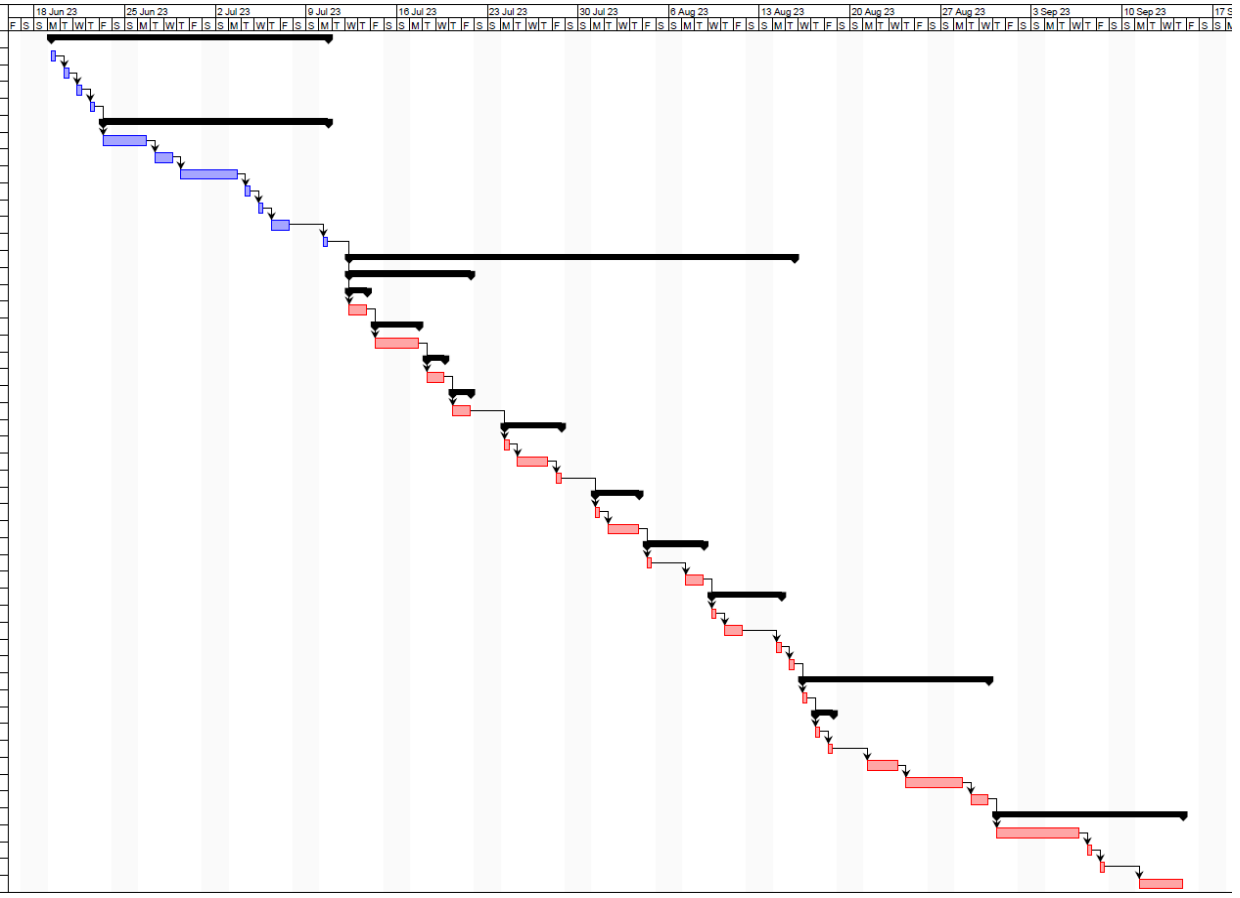


Figure 3.3 Project Gantt Chart (Part 2)

3.4 Tools and Techniques

3.4.1 Visual Studio Code

Visual Studio Code is an open-source code editor which provides a rich set of features for developers. It offers a wealth of features such as an adaptable and extensible user interface, integrated Git support, and many more. VS Code becomes a chosen platform for development because of its quick performance, and cross-platform interoperability with multiple frameworks and tools.

3.4.2 WAMP Server

Apache, MySQL, and PHP are components of the Windows web development software stack known as WAMP Server. Before deploying, it offers a local environment for developing and testing websites.

3.4.3 MySQL

Open-source MySQL is a relational database management system for holding and controlling structured data. Due to its simplicity of use, efficiency, and cost, it is well-liked in web development and offers extensive capabilities and support for SQL.

3.4.4 Laravel

Laravel is renowned for its graceful syntax, powerful functionality, and developer-friendly tools. It is effective for creating scalable online applications since it includes capabilities like routing, database abstraction, and authentication by following the Model-View-Controller design (MVC). It has a sizable community and is well-known in contemporary web development.

3.4.5 Axure RP

Axure RP is a prototyping tool for web and mobile applications. To build high-fidelity prototypes for efficient team collaboration and communication, Axure RP provides a drag-and-drop interface, dynamic interactions, and data-driven simulations. Axure RP aids in iterating and perfecting designs prior to

development and is used in UX design, product development, and usability testing. Axure RP is used for the creation of the initial prototype to illustrate the design of the syllabus management portal.

3.4.6 Enterprise Architecture

Enterprise Architecture, which includes business processes, information systems, data, applications, and technological infrastructure, can be designed, analyzed, and optimized using the Enterprise Architecture tool. It offers tools for building, documenting, and analyzing architectural models as well as for conducting impact analyses and generating reports. In this project, Enterprise Architecture is used to sketch the use case diagram, activity diagram, and class diagram to assist in the explanation of the workflow of the functionalities in this project.

3.4.7 Git

Git is a version control platform used to manage program configuration. Git was implemented to effectively monitor source code modifications during the whole development process.

3.4.8 JQuery

JQuery is a JavaScript library that simplifies web development. It helps manipulate webpage elements, handle events, make server requests (AJAX), and create animation with a user-friendly syntax.

CHAPTER 4

INITIAL PROJECT SPECIFICATION

4.1 Functional Requirement

i. The web-based application shall allow users to log in using an email and password.

ii. Users shall be assigned different roles including staff and lecturers.

iii. The web application shall allow users to modify their account details.

iv. The web-based application shall provide a navigation bar to assist users in managing the portal.

CRUD Operation

v. The web-based application shall allow users to create a new course syllabus.

vi. The web-based application shall allow users to review the created course syllabus.

vii. The web-based application shall allow users to search for the course syllabus according to the details.

viii. The web-based application shall allow users to update details in the course syllabus.

ix. The web-based application shall allow staff to approve the pending course syllabus.

x. The web-based application shall allow staff to archive the created course syllabus.

xi. The web-based application shall allow staff to restore the archived course syllabus.

xii. The web-based application shall allow users to export the course syllabus to a pdf file.

Audit Logs

xiii. The web-based application shall allow users to keep track of the changes in the course syllabus.

a. The audit logs shall provide an audit log function to keep track of the changes in all course syllabi.
b. The audit logs shall provide a search bar for searching the audit log of a certain course syllabus.
c. The audit logs shall display the changes in the old value and the new value of the course syllabus.
d. The audit logs shall display the date and time for every action throughout the course syllabus.
e. The audit logs shall display the course code and course name of the course syllabus.
f. The audit logs shall display the username of who performed the changes to the course syllabus.

4.2 Non-Functional Requirement

i. Usability

a. The web-based application shall be responsive in different screen sizes.

b. The web-based application shall allow users to learn all functionalities after reading the guidelines.

c. The web-based application shall provide a user-friendly experience interface.

ii. Performance

a. The web-based application shall be loaded within 5 seconds.

b. The web-based application shall be able to do searching and display the search result within 5 seconds.

iii. Correctness

a. The web-based application shall be able to retrieve and update the data in the database accurately.

b. The web-based application shall be able to retrieve and display the search results according to the search details.

iv. Security

a. Only administrators are allowed to delete the created course syllabus.

b. Only lecturers and staff in LKC FES faculty are allowed to access the syllabus management portal.

4.3 Use Case Diagram

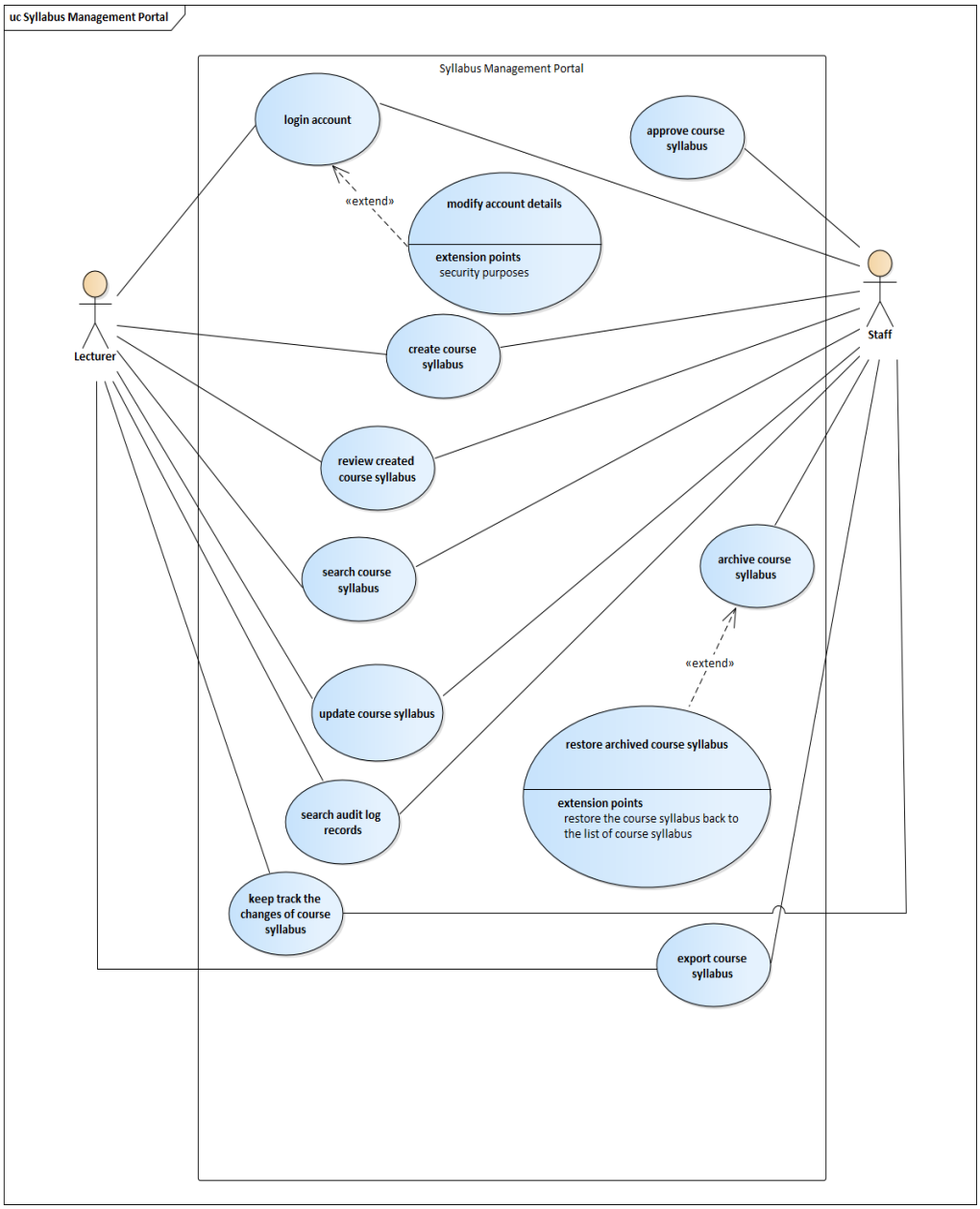
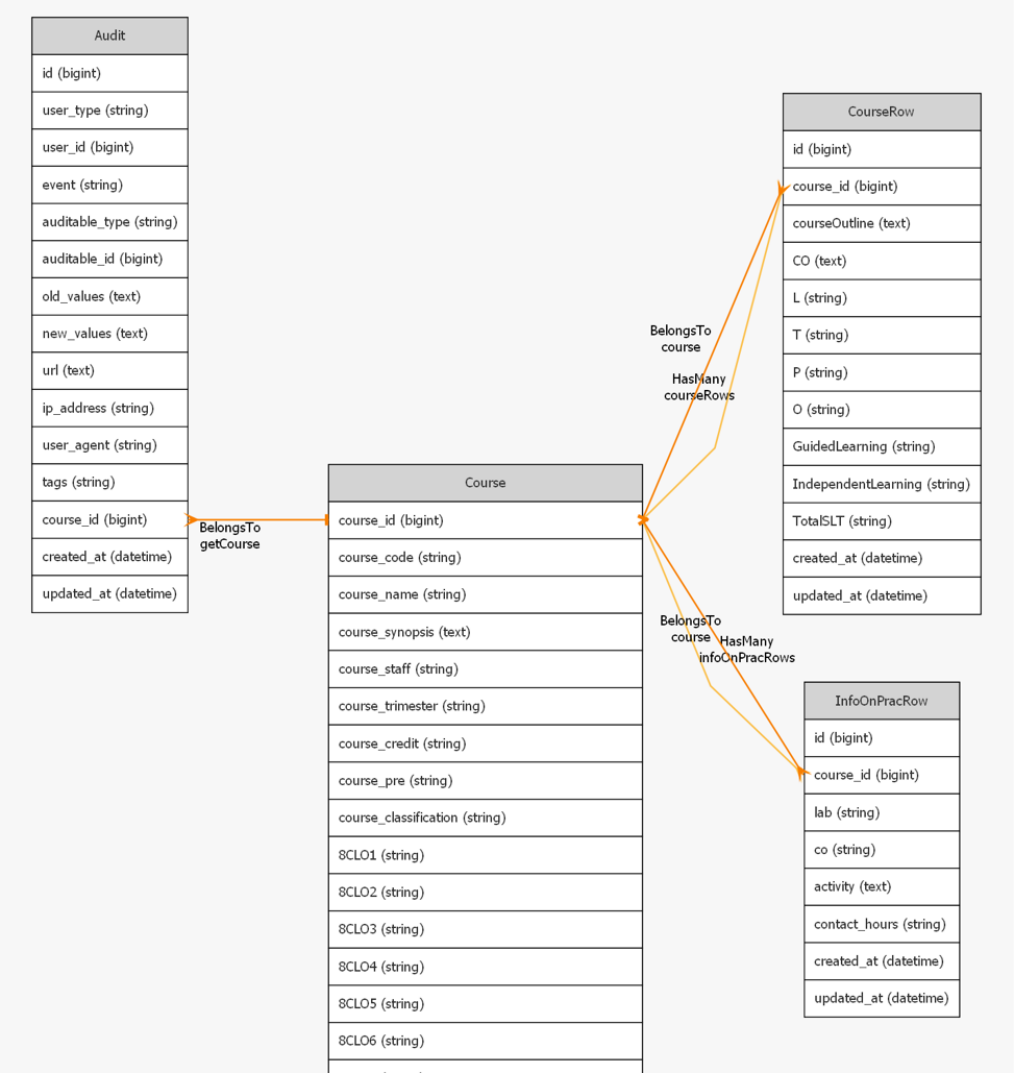


Figure 4.1 Use case diagram

4.4 Database Design

Entity Relationship Diagram (ERD) is designed to identify the relationship between database models.

4.4.1 Entity Relationship Diagram (ERD)



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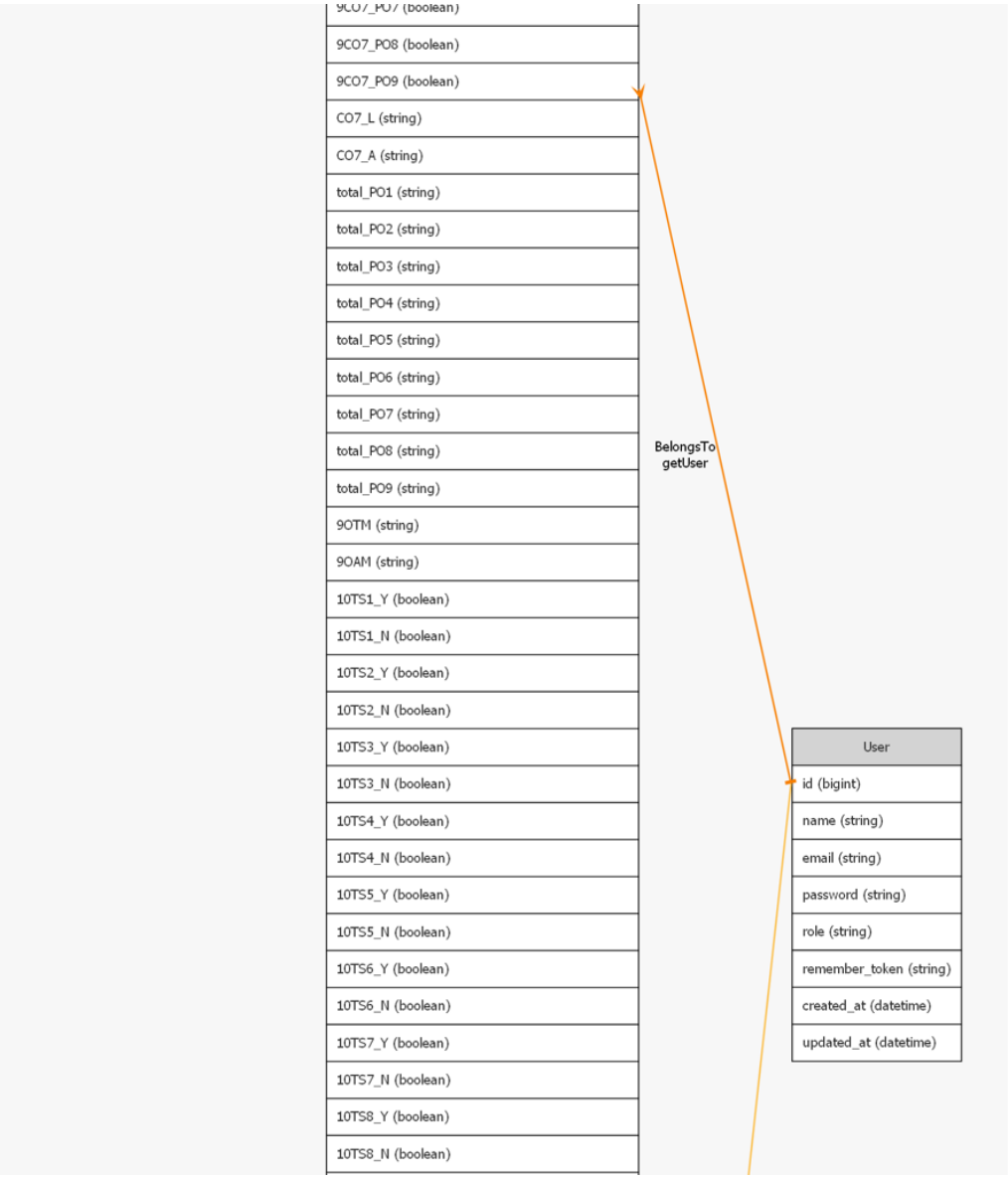
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10TS7_N (boolean)
10TS8_Y (boolean)
10TS8_N (boolean)
BelongsTo
getUser
User
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email (string)
password (string)
role (string)
remember_token (string)
created_at (datetime)
updated_at (datetime)

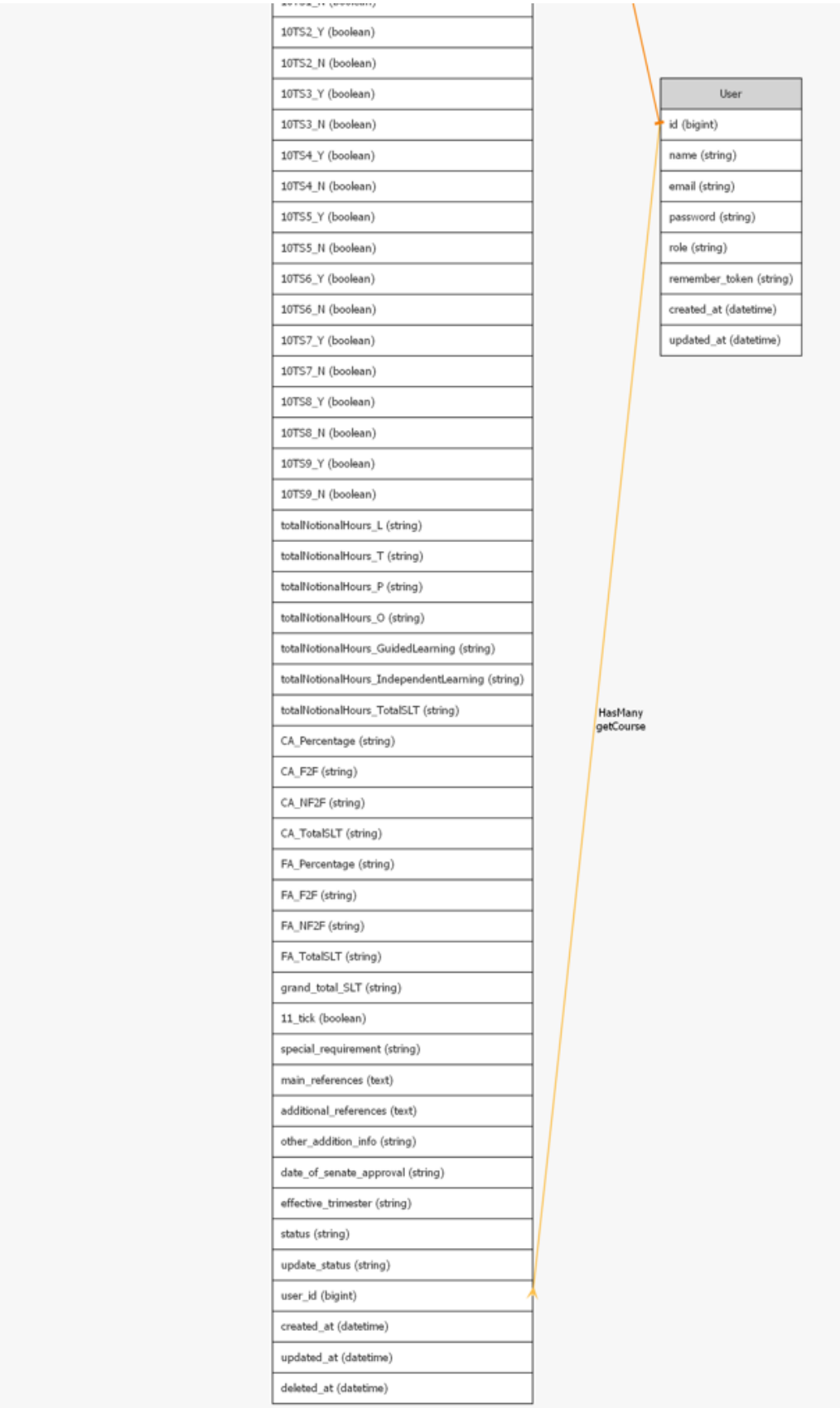

Figure 4.2 Entity Relationship Diagram

Based on the entity relationship diagram, the relationships represented the connections between the various tables in the database.

1. Users

The table has a one-to-many relationship with the ‘Courses’ table, which means a user can create multiple courses.

2. Courses

‘Courses’ table has a one-to-many relationship with ‘CourseRows’ and ‘InfoOnPracRows’ tables. A course syllabus can create multiple ‘CourseRows’ (distribution of student learning time) and ‘InfoOnPracRows’ (info on practical).

3. Audits

Audits table has a polymorphic relationship with ‘Courses’ table and other auditable entities. It contains information about the user who performed the action by referring to the foreign key (user_id). Besides, it has an optional foreign key relationship with the ‘Courses’ table.

4. CourseRows

The ‘CourseRows’ belongs to a course (course_id) via a foreign key. It can have many ‘CourseRows’ in one ‘Courses’.

5. InfoOnPracRows

The ‘InfoOnPracRows’ belongs to a course (course_id) via a foreign key. It can have multiple ‘InfoOnPracRows’ in the ‘Courses’.

4.4.2 Data Dictionary

1. Users table

Attribute name	Data type	Nullable	Primary Key/ Foreign Key	Referenced Table
id	bigint(20)	no	PK	
name	varchar(50)	no		
Email	varchar(191)	no		
password	varchar(60)	no		
role	char(10)	no		

Table 4.1 User table

2. Courses table

Attribute name	Data type	Nullable	Primary Key/ Foreign Key	Referenced Table
course_id	bigint(20)	No	PK	
course_code	varchar(255)	No		
course_name	varchar(255)	No		
course_synopsis	text	No		
course_staff	varchar(255)	Yes		
course_trimester	varchar(255)	No		
course_credit	varchar(255)	No		
course_pre	varchar(255)	Yes		
course_classification	varchar(255)	No		
8CLO1	varchar(255)	Yes		
8CLO2	varchar(255)	Yes		

8CLO3	varchar(255)	Yes		
8CLO4	varchar(255)	Yes		
8CLO5	varchar(255)	Yes		
8CLO6	varchar(255)	Yes		
8CLO7	varchar(255)	Yes		
8DTL1	varchar(255)	Yes		
8DTL2	varchar(255)	Yes		
8DTL3	varchar(255)	Yes		
8DTL4	varchar(255)	Yes		
8DTL5	varchar(255)	Yes		
8DTL6	varchar(255)	Yes		
8DTL7	varchar(255)	Yes		
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totalNotionalHours_T	varchar(50)	No		
totalNotionalHours_P	varchar(50)	No		
totalNotionalHours_O	varchar(50)	No		
totalNotionalHours_Guided Learning	varchar(50)	No		

totalNotionalHours_IndependentLearning	varchar(50)	No		
totalNotionalHours_TotalSLT	varchar(50)	No		
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CA_F2F	varchar(50)	No		
CA_NF2F	varchar(50)	No		
CA_TotalSLT	varchar(50)	No		
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FA_F2F	varchar(50)	No		
FA_NF2F	varchar(50)	No		
FA_TotalSLT	varchar(50)	No		
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special_requirement	varchar(255)	No		
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additional_references	text	No		
other_addition_info	varchar(255)	No		
date_of_senate_approval	varchar(50)	No		
effective_trimester	varchar(50)	No		
status	varchar(191)	No		
user_id	bigint(20)	No	FK	users

Table 4.2 Courses table

3. Audits table

Attribute name	Data type	Nullable	Primary Key/ Foreign Key	Referenced Table
id	bigint(20)	No	PK	
_type	varchar(191)	Yes		
_id	bigint(20)	Yes		
event	varchar(191)	No		
auditable	varchar(191)	No		
old_values	text	Yes		
new_values	text	Yes		
url	text	Yes		
ip_address	varchar(45)	Yes		
user_agent	varchar(1023)	Yes		
tags	varchar(191)	Yes		
course_id	bigint(20)	No	FK	courses

Table 4.3 Audits table

4. CourseRows table

Attribute name	Data type	Nullable	Primary Key/ Foreign Key	Referenced Table
id	bigint(20)	No	PK	
course_id	bigint(20)	No	FK	courses
courseOutline	text	No		

CO	text	No		
L	varchar(191)	No		
T	varchar(191)	No		
P	varchar(191)	No		
O	varchar(191)	No		
GuidedLearning	varchar(191)	No		
IndependentLearning	varchar(191)	No		
TotalSLT	varchar(191)	No		

Table 4.4 CourseRows table

5. InfoOnPracRows table

Attribute name	Data type	Nullable	Primary Key/ Foreign Key	Referenced Table
id	bigint(20)	No	PK	
course_id	bigint(20)	No	FK	courses
lab	varchar(191)	No		
co	varchar(191)	No		
activity	text	No		
contact_hours	varchar(191)	No		

Table 4.5 InfoOnPracRows table

4.5 Use Case Description

Use Case Name**: Login Account**	ID**: UC01**	Importance Level**: High**
Primary Actor**: User (staff and lecturer)**	Use Case Type**: Detail, Essential**	
Stakeholders and Interests**:** **User - wants to log in to start using the portal.**		
Brief Description**: This use case describes how we log in to the portal and what happens if we are unable to.**		
Trigger**: Users attempt to log in to the portal.**		
Relationships: Association **: Users (staff and lecturer)** Include **: N/A** Extend **: Modify account details** Generalization**: N/A**		
Normal Flow of Events**:** 1. **System prompts the user to enter email and password.** 2. **Users enter their email and password.** 3. **If both email and password are inserted correctly, the user is allowed access to the portal.** 4. **If the email or password is incorrect, perform Sub-flow S-4.** 5. **Users continue using the portal until they are willing to logout.**		

Sub-flows**:** **S-4 Wrong Email or Password** 1. **System shows an error message.** 2. **System will repeat from normal flow step 1.**
Alternate/Exceptional Flows: **N/A**

Table 4.6 Use Case Description 1 – Login Account

Use Case Name**: Modify Account Details**	ID**: UC02**	Importance Level**: High**
Primary Actor**: Users (staff and lecturer)**	Use Case Type**: Detail, Essential**	
Stakeholders and Interests**:** **Users – wants to modify account details.**		
Brief Description**: This use case describes how we can modify account details.**		
Trigger**: Users want to modify their account details.**		

Relationships: Association **: Users (staff and lecturer)** Include **: N/A**
Extend **: N/A** Generalization**: N/A**
Normal Flow of Events**:** 1. **Users click on the profile button in the dropdown bar.** 2. **System displays the account details.** 3. **Users edit their name, email, or password if they want.** 4. **System shows a flash session to show the successful message.**
Sub-flows**: N/A**
Alternate/Exceptional Flows: N/A

Table 4.7 Use Case Description 2 – Modify Account Details

Use Case Name**: Create Course Syllabus**	ID**: UC03**	Importance Level**: High**
Primary Actor**: Users (staff and lecturer)**	Use Case Type**: Detail, Essential**	
Stakeholders and Interests**:** **User– wants to create a new course syllabus and store into the system database.**		

Brief Description**: This use case describes how we create a new course syllabus and store it in the database.**
Trigger**: Users want to create a new course syllabus and store in the database.**
Relationships: Association **: Users (staff and lecturer)** Include **: N/A** Extend **: N/A** Generalization**: N/A**
Normal Flow of Events**:** **1. Users enter the details of the course syllabus.** **2. Once users are sure that the details of the course syllabus are inserted correctly, users click on the Create Course syllabus button.** **3. System stores the created course syllabus in the database.** **4. System will redirect back to the homepage of the portal.** **5. Users can create more course syllabi by repeating step 1.**
Sub-flows**: N/A**
Alternate/Exceptional Flows: N/A

Table 4.8 Use Case Description 3 – Create Course Syllabus

Use Case Name**: Approve Course Syllabus**	ID**: UC04**	Importance Level**: High**
Primary Actor**: Users (staff)**	Use Case Type**: Detail, Essential**	
Stakeholders and Interests**:** **Users – want to approve the pending course syllabus from the lecturer and staff.**		
Brief Description**: This use case describes how we approve the pending course syllabus from the lecturer and staff.**		
Trigger**: Users want to approve the pending course syllabus from the lecturer and staff.**		
Relationships: Association **: Users (staff)** Include **: N/A** Extend **: N/A** Generalization**: N/A**		
Normal Flow of Events**:** 1. **Staff select the pending course syllabus.** 2. **If users want to view the pending created course syllabus, perform sub-flow S-2.** 3. **If users want to update the details in the created course syllabus, perform sub-flow S-4.** 4. **If users want to keep track of the changes in the course syllabus, perform sub-flow S-5.** 5. **Staff approves the pending course syllabus, and it will show in the main list of course syllabi in the lecturer's view.**		

Sub-flows**:** **S-2. Users perform Review Created Course Syllabus use case.** **S-4. Users perform Update Course Syllabus use case.** **S-5. Users perform Keep Track the Changes in The Course Syllabus use case.**
Alternate/Exceptional Flows:

Table 4.9 Use Case Description 4 - Approve Course Syllabus

Use Case Name**: Review Created Course Syllabus**	ID**: UC05**	Importance Level**: High**
Primary Actor**: Users (staff and lecturer)**	Use Case Type**: Detail, Essential**	
Stakeholders and Interests**:** **Users – wants to review the created course syllabus.**		
Brief Description**: This use case describes how the system display a list of course syllabus to allow the viewing for users.**		
Trigger**: Users want to review the created course syllabus.**		
Relationships: Association **: Users (staff and lecturer)** Include **: N/A** Extend **: N/A** Generalization**: N/A**		

Normal Flow of Events**:** 6. **Users select the created course syllabus.** 7. **If users want to search the specifically created course syllabus, perform sub-flow S-2.** 8. **The system retrieves the data from the database and displays it to the users.** 9. **If users want to update the details in the created course syllabus, perform sub-flow S-4.** 10. **If users want to keep track of the changes in the course syllabus, perform sub-flow S-5.** 11. **Users can use the portal to view more created course syllabi by repeating step 1.**
Sub-flows**:** **S-2. Users perform Search Course Syllabus use case.** **S-4. Users perform Update Course Syllabus use case.** **S-5. Users perform Keep Track the Changes in The Course Syllabus use case.**
Alternate/Exceptional Flows: 1a. Users cannot find desired receipts and do not select any course syllabus, use case ends.

Table 4.10 Use Case Description 5 – Review Created Course Syllabus

Use Case Name**: Search Course Syllabus**	ID**: UC06**	Importance Level**: High**
Primary Actor**: Users (staff and lecturer)**	Use Case Type**: Detail, Essential**	
Stakeholders and Interests**:** **Users – want to search the specific course syllabus.**		

Brief Description**: This use case describes how we can search for a specific course syllabus from the system database.**
Trigger**: Users want to search for a specific course syllabus from the system database.**
Relationships: Association **: Users (staff and lecturer)** Include **: N/A** Extend **: N/A** Generalization**: N/A**
Normal Flow of Events**:** 1. **Users enter the course name or course code in the search bar.** 2. **System displays all the receipts with matching keywords to the user's input.** 3. **If the desired course syllabus is found, the user selects it.** 4. **If the course syllabus is not found, perform sub-flow S-4.** 5. **Users can repeat Step 1 to search for another course syllabus.**
Sub-flows**:** **S-4. Course Syllabus not found** 1. **System shows a message of no matched course syllabus, prompting users to enter another keyword.** 2. **Repeat step 1.**
Alternate/Exceptional Flows: N/A

Table 4.11 Use Case Description 6 – Search Course Syllabus

Use Case Name**: Update Course Syllabus**	ID**: UC07**	Importance Level**: High**
Primary Actor**: Users (staff and lecturer)**	Use Case Type**: Detail, Essential**	
Stakeholders and Interests**:** **Users – wants to update details of the created course syllabus.**		
Brief Description**: This use case describes how we can update the details in the created course syllabus.**		
Trigger**: Users want to update the details in the created course syllabus.**		
Relationships: Association **: Users (staff and lecturer)** Include **: N/A** Extend **: N/A** Generalization**: N/A**		
Normal Flow of Events**:** 1. **Users select the created course syllabus.** 2. **Users click on the update button to modify the details in the created course syllabus.** 3. **Users amend the details on the created course syllabus.** 4. **Users save the changes by clicking the save button.** 5. **Users can update another created course syllabus by repeating step 1.**		

Sub-flows**: N/A**
Alternate/Exceptional Flows: N/A

Table 4.12 Use Case Description 7 – Update Course Syllabus

Use Case Name**: Keep Track the Changes in Course Syllabus**	ID**: UC08**	Importance Level**: High**
Primary Actor**: Users (staff and lecturer)**	Use Case Type**: Detail, Essential**	
Stakeholders and Interests**:** **Users – want to keep track of the changes in the updated course syllabus.**		
Brief Description**: This use case describes how we can keep track of the changes in the updated course syllabus compared to the previous version of the course syllabus.**		
Trigger**: Users want to keep track of the changes in the updated course syllabus.**		

Relationships: Association **: Staff and Lecturer** Include **: N/A** Extend **: N/A** Generalization**: N/A**
Normal Flow of Events**:** 1. **Users click the audit logs button in the dropdown bar.** 2. **The system retrieves the data from the database and displays the comparison result of the latest version and previous version of the details in the course syllabus to the users.** 3. **Users can keep track of the changes in the other course syllabus by repeating step 1.**
Sub-flows**: N/A**
Alternate/Exceptional Flows: N/A

Table 4.13 Use Case Description 8 – Keep Track the Changes in Course Syllabus

Use Case Name**: Search Audit Log Records**	ID**: UC09**	Importance Level**: High**
Primary Actor**: Users (staff and lecturer)**	Use Case Type**: Detail, Essential**	

Stakeholders and Interests**:**

Users – want to search the audit log records.

Brief Description**: This use case describes how we can search the audit log records using course code or course name as a keyword.**

Trigger**: Users want to search the audit log records.**

Relationships:

Association **: Staff and Lecturer**

Include **: N/A**

Extend **: N/A**

Generalization**: N/A**

Normal Flow of Events:

1. **Users click the audit logs button in the dropdown bar.**
2. **The system retrieves the data from the database and displays the comparison result of the latest version and previous version of the details in the course syllabus to the users.**
3. **Users search the audit log records by entering the course code or course name as a keyword.**
4. **The system retrieves all the course syllabus audit log records that match the course code or course name.**
5. **Users can search other course syllabus audit log records by repeating step 3.**

Sub-flows**: N/A**

Alternate/Exceptional Flows: N/A

Table 4.14 Use Case Description 9 - Search Audit Log Records

Use Case Name**: Archive Course Syllabus**	ID**: UC10**	Importance Level**: High**
Primary Actor**: Staff**	Use Case Type**: Detail, Essential**	
Stakeholders and Interests**:** **Staff – wants to delete the created course syllabus.**		
Brief Description**: This use case describes how we can archive the created course syllabus.**		
Trigger**: Staff wants to archive the created course syllabus.**		
Relationships: Association **: Staff** Include **: N/A** Extend **: Restore archived course syllabus** Generalization**: N/A**		
Normal Flow of Events: 1. **Staff selects the created course syllabus.** 2. **Staff clicks on the archive button of the created course syllabus.** 3. **System prompts a warning message to confirm with this archive action.** 4. **If staff wants to cancel the archive action, perform sub-flow S-4.** 5. **System archives the created course syllabus and stores it in the archived course file.** 6. **If staff decide to restore the archived course syllabus, perform sub-flows S-6.** 7. **Staff can archive another created course syllabus by repeating step 1.**		

Sub-flows**:** **S-4. Cancel the archive course syllabus action.** 1. **Staff clicks on the cancel button.** 2. **System redirects back to the homepage.** 3. **Repeat step 1.** **S-6. Staff performs Restore Archived Course Syllabus use case.**
Alternate/Exceptional Flows: N/A

Table 4.15 Use Case Description 10 – Archive Course Syllabus

Use Case Name**: Restore Archived Course Syllabus**	ID**: UC11**	Importance Level**: High**
Primary Actor**: Staff**	Use Case Type**: Detail, Essential**	
Stakeholders and Interests**:** **Staff – wants to restore the archived course syllabus.**		
Brief Description**: This use case describes how we can restore the archived course syllabus.**		
Trigger**: Staff wants to restore the archived course syllabus.**		
Relationships: Association **: Staff** Include **: N/A** Extend **: N/A** Generalization**: N/A**		

Normal Flow of Events: **1. Staff clicks on the archived course button in the dropdown bar.** **2. The system displays the list of archived course syllabi.** **3. Staff click on the restore button.** **4. The system restore the course syllabus back to the list of course syllabus.**
Sub-flows**: N/A**
Alternate/Exceptional Flows: **N/A**

Table 4.16 Use case description: Restore Archived Course Syllabus

Use Case Name**: Export Course Syllabus**	ID**: UC12**	Importance Level**: High**
Primary Actor**: Users (staff and lecturer)**	Use Case Type**: Detail, Essential**	
Stakeholders and Interests**:** **Users – wants to export course syllabus.**		
Brief Description**: This use case describes how we can export the course syllabus to pdf files.**		
Trigger**: Users want to export the course syllabus to pdf files.**		

Relationships: Association **: Users (staff and lecturer)** Include **: N/A** Extend **: N/A** Generalization**: N/A**
Normal Flow of Events: **1. Users click on the view button of the course syllabus.** **2. Users click on the export pdf button.** **3. The system downloads the course syllabus in pdf format.** **4. The system creates a new tab in the browser and displays the pdf file.** **5. Users can export PDF files by repeating step 2.**
Sub-flows**: N/A**
Alternate/Exceptional Flows: **N/A**

Table 4.17 Use case description: Export Course Syllabus

4.6 Prototype

The suggested system's user interface (UI) design was initially designed in Axure RP 9 and then implemented once the design was approved. The photos below depict the system's major displays.

4.6.1 Login Page

The syllabus management portal will start with the login page. It displays a form that prompts users to fill in the username and password.

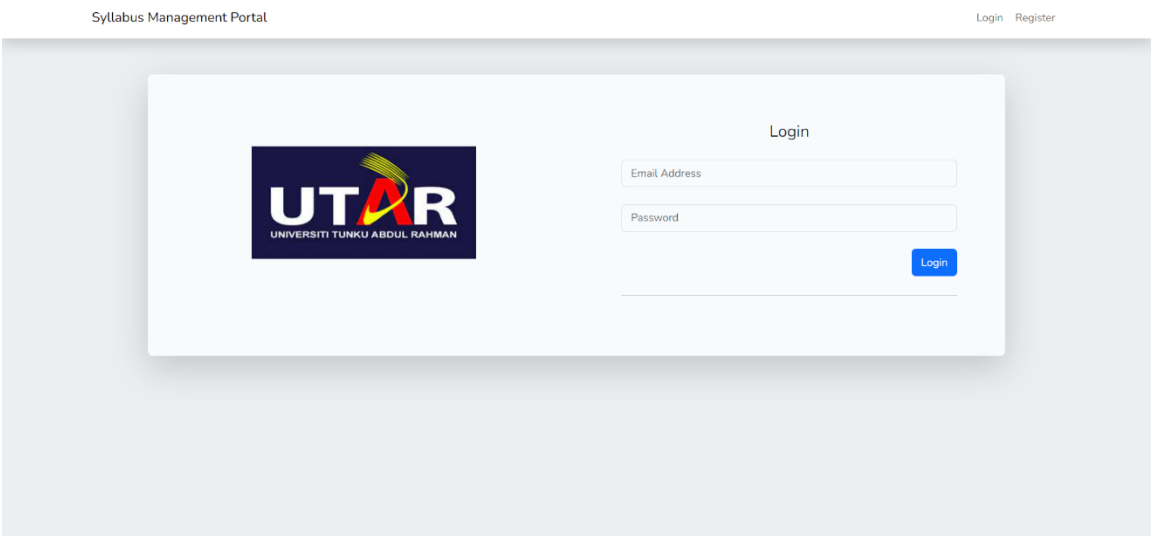


Figure 4.3 Login Page

4.6.2 Home Page

On the home page of the syllabus management portal, a list of the created course syllabi will be displayed. Besides, a navigation bar will help as a primary means of navigation. A search bar is provided for the searching of the course syllabus by entering the code or course name of the course syllabus. In addition, a button is provided to allow users to create new course syllabi.

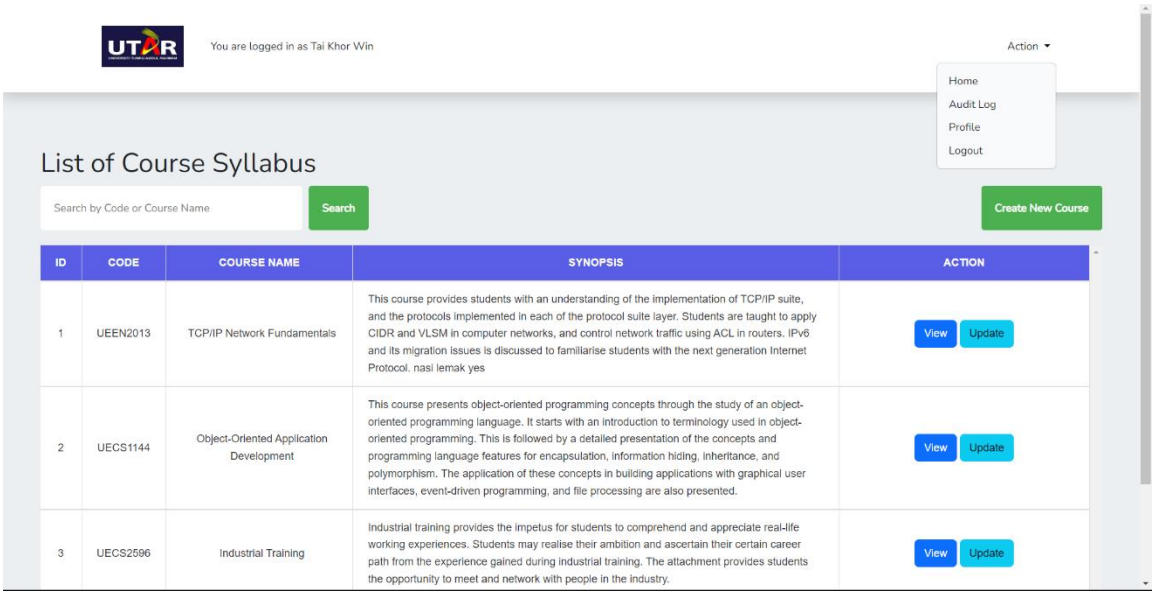


Figure 4.4 Home page

4.6.3 Restore function for Staff

The restore button will only be accessible to the staff to restore the archived course syllabus.

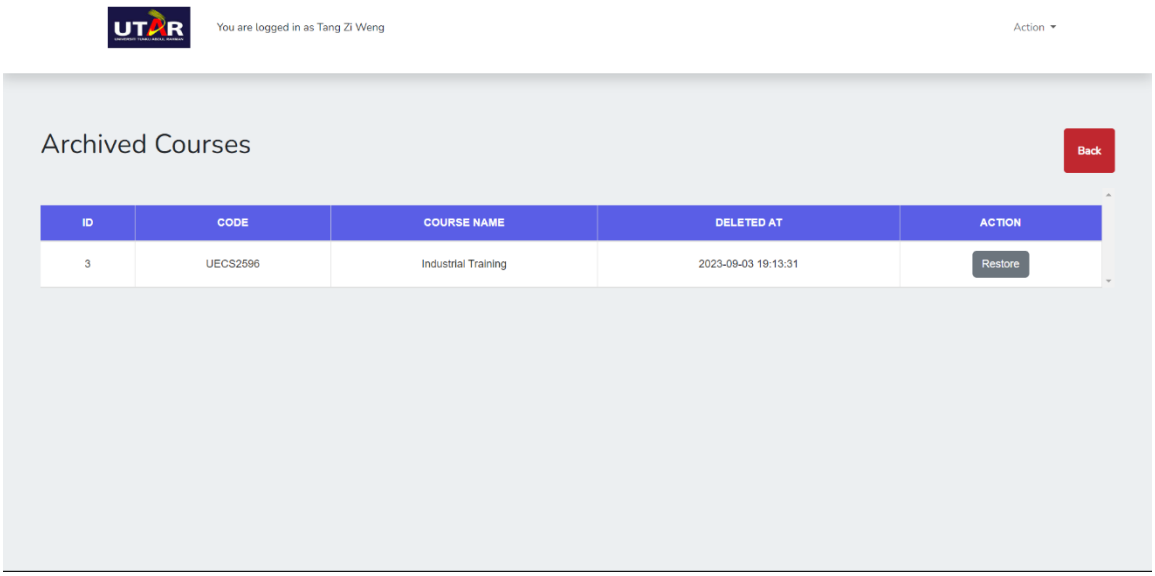


Figure 4.5 Restore function for staff only

4.6.4 Archive Function for Staff

The archive button will only be accessible to the staff for security purposes.

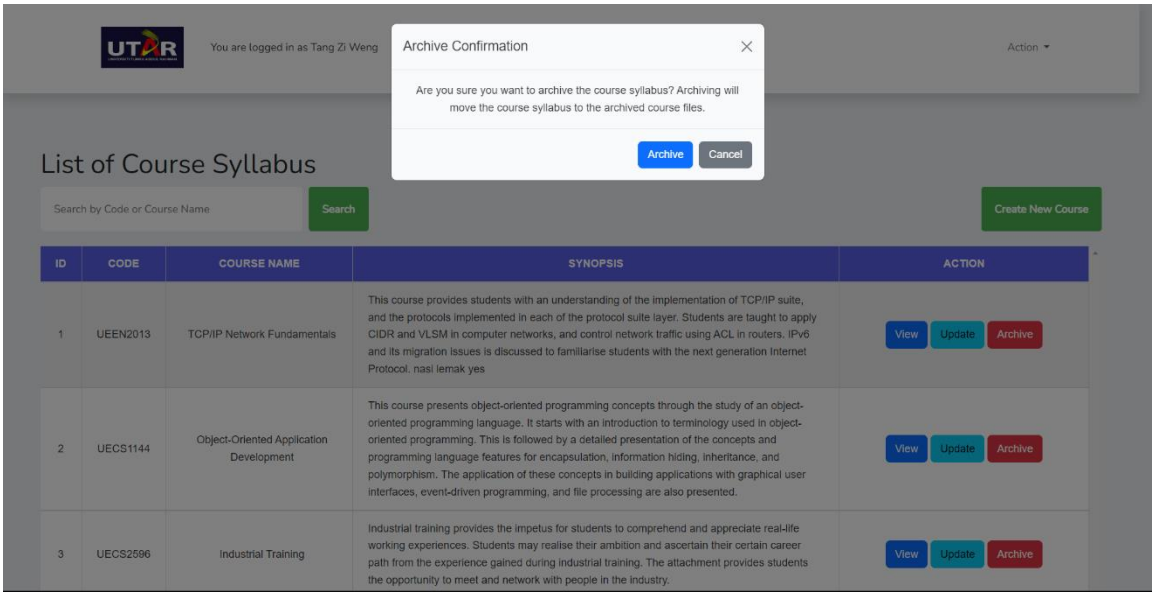


Figure 4.6 Archive function for staff only

4.6.5 Create Course Syllabus Page

A CRF template will be given when users decide to create a new course syllabus.

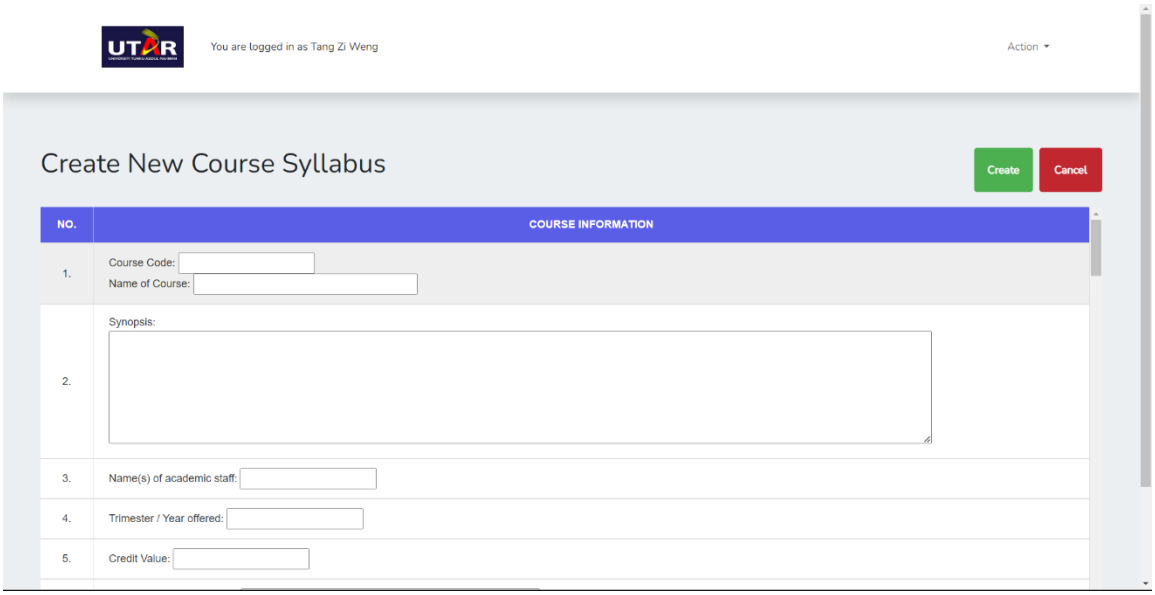


Figure 4.7 Create course syllabus page.

4.6.6 Review Course Syllabus Page

Users are allowed to view the created course syllabi. The portal will display the course information in a table form.

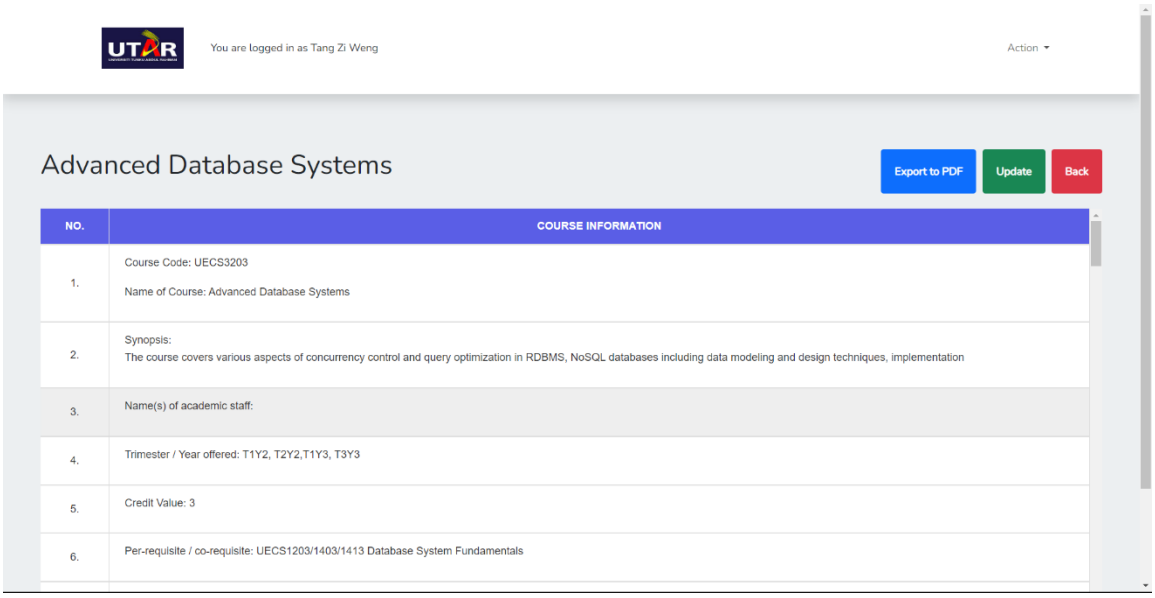


Figure 4.8 Review course syllabus page

4.6.7 Update Course Syllabus Page

Users are allowed to fill in the details of the course syllabus if changes in content are needed.

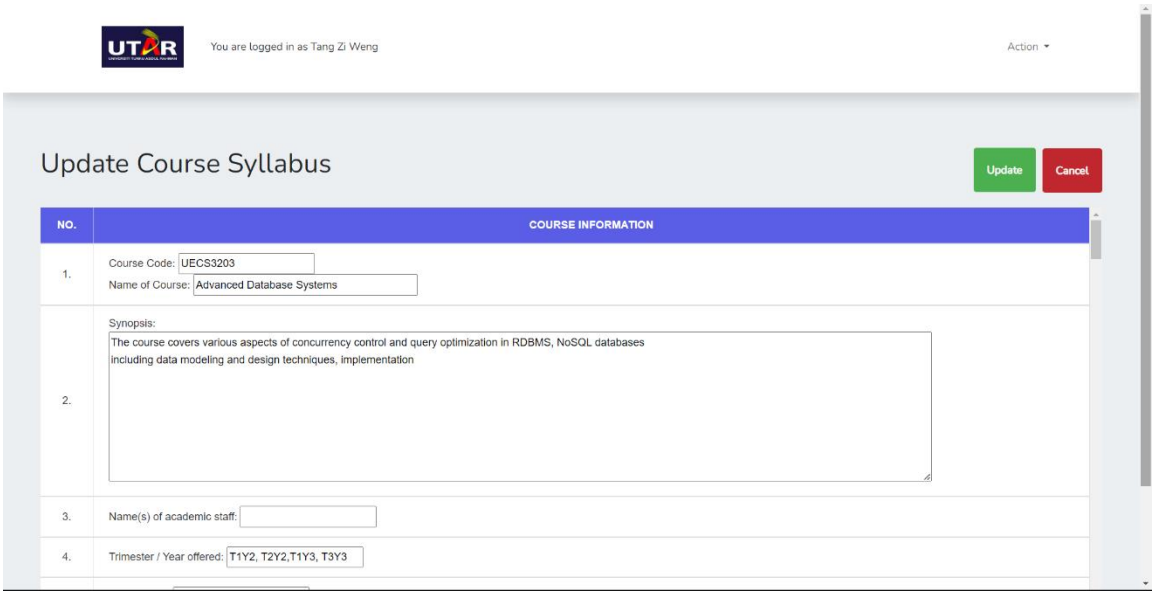


Figure 4.9 Update course syllabus page

4.6.8 Audit Log Page

A list of audit log history will be displayed when users click on the audit logs button in the dropdown menu bar. A search bar is given to allow users to search for the course syllabus by inserting the course code and course name.

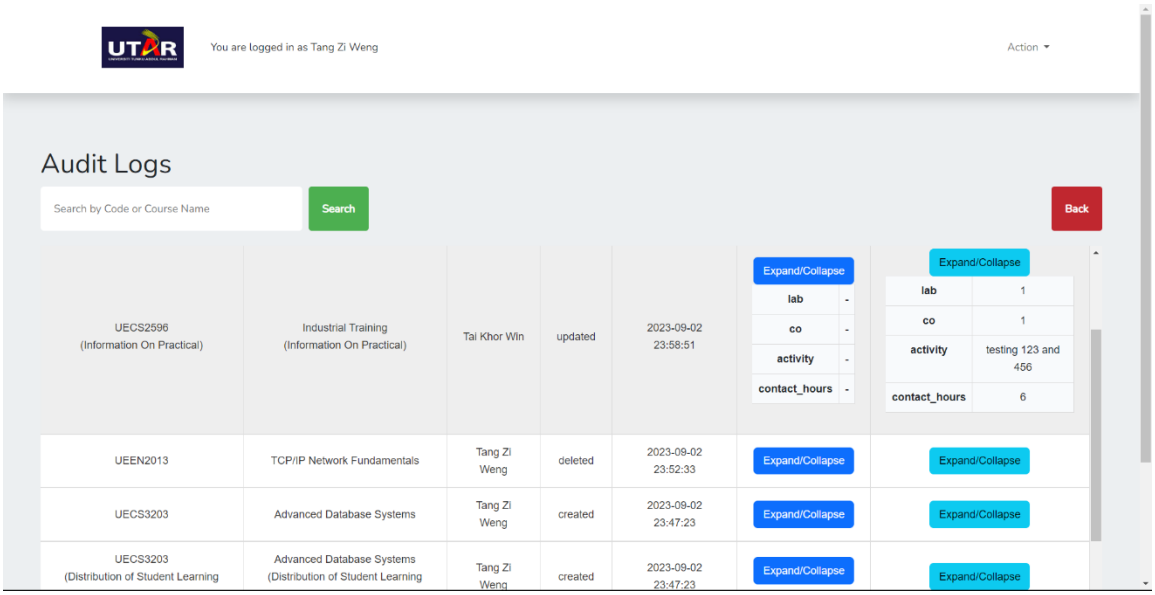


Figure 4.10 Audit log page

4.6.9 Account Detail Page

Users are allowed to modify their personal information on the account details page. An audit log history made by the user will be displayed under the personal information.

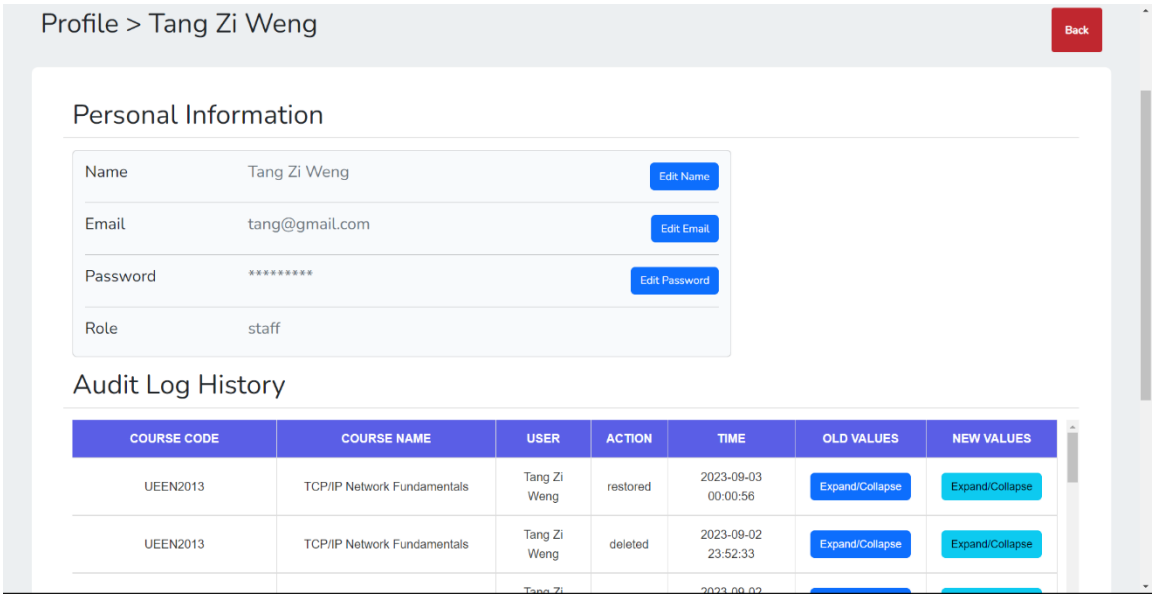


Figure 4.11 Account details page

CHAPTER 5

SYSTEM IMPLEMENTATION

5.1 Overview

This topic covered various aspects of how the system works, the role of different users, system functionalities, and deployment to GitHub.

5.2 Role Distribution

To meet the unique requirements of faculty members for effective course syllabus administration, the LKC FES Syllabus Management Portal has been created. This site provides a number of essential features that are intended to streamline the syllabus management procedure and improve the collaboration among staff and lecturers in LKC FES faculty. The user groups are divided into two different roles, which are staff and lecturer. The distinct tasks are responsibilities of these two important roles are accommodated by this complete platform, which allows for smooth course syllabus management.

User Role	Functionalities
Staff	• Login account • Modify account details • Create course syllabus • Review created course syllabus • Search course syllabus • Update course syllabus • Keep track the changes of course syllabus • Search audit log records • Export course syllabus • Archive course syllabus • Restore archived course syllabus • Approve course syllabus

Lecturer	• Login account • Modify account details • Create course syllabus • Review created course syllabus • Search course syllabus • Update course syllabus • Keep track the changes of course syllabus • Search audit log records • Export course syllabus

Table 5.1 Functionalities with different user roles

According to the table above, Staff members have additional functionalities that involve archiving and restoring course syllabi and approving course syllabi. This allows them to maintain and organize the syllabus database effectively, ensuring that syllabi adhere to institutional standards and regulations. In short, staff members have a broader administrative role in managing the portal and maintaining data integrity, while lecturers concentrate on educational content within the portal. Their combined functions strengthen one another, resulting in an organized syllabus management process within the faculty.

5.3 Authentication

The login page prompts users to log in to the system using their email address and password. When the login attempt succeeds, the user will be redirected to the main page. The main page of the two different roles will have slight differences as the staff offers extra features which is the archive and restore function. When a user logs in, the system performs authentication checks to determine their role.

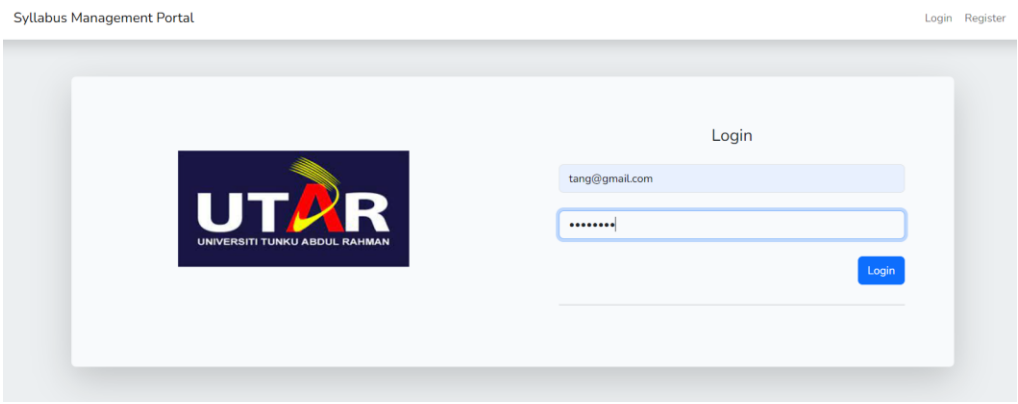


Figure 5.1 Login page

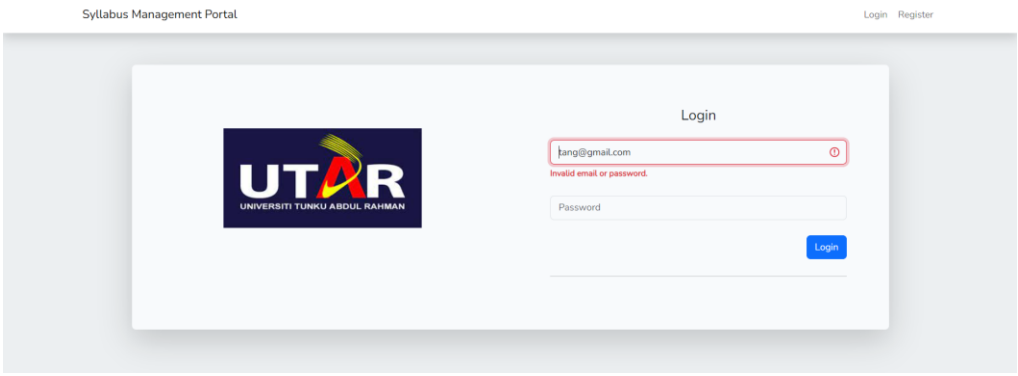


Figure 5.2 Failed Login page

If the authenticated user's role is identified as staff, the system will redirect them to the homepage with additional functionalities.

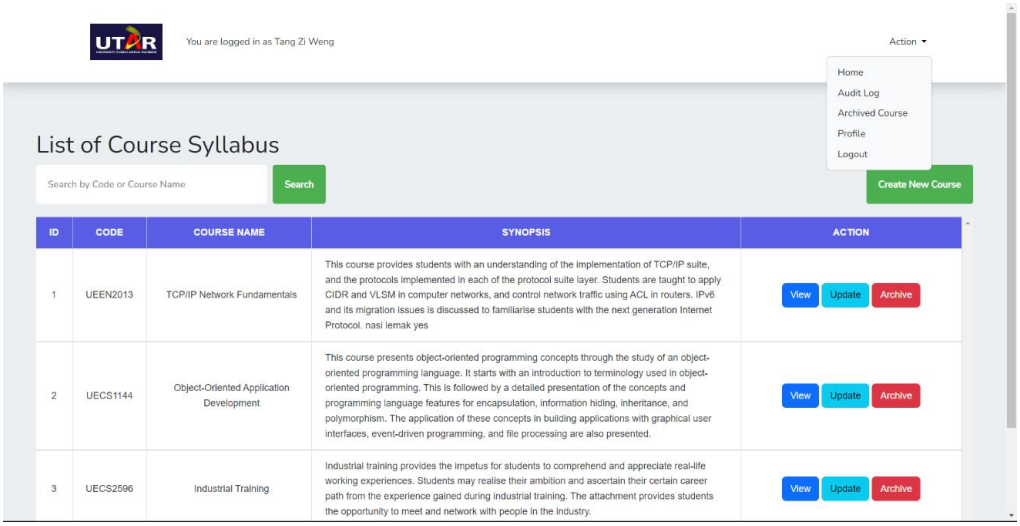


Figure 5.3 Authenticated home page for staff

Conversely, the user with a lecturer role will be sent to the portal's homepage, which is intended to simplify course syllabus creation, review, and updating.

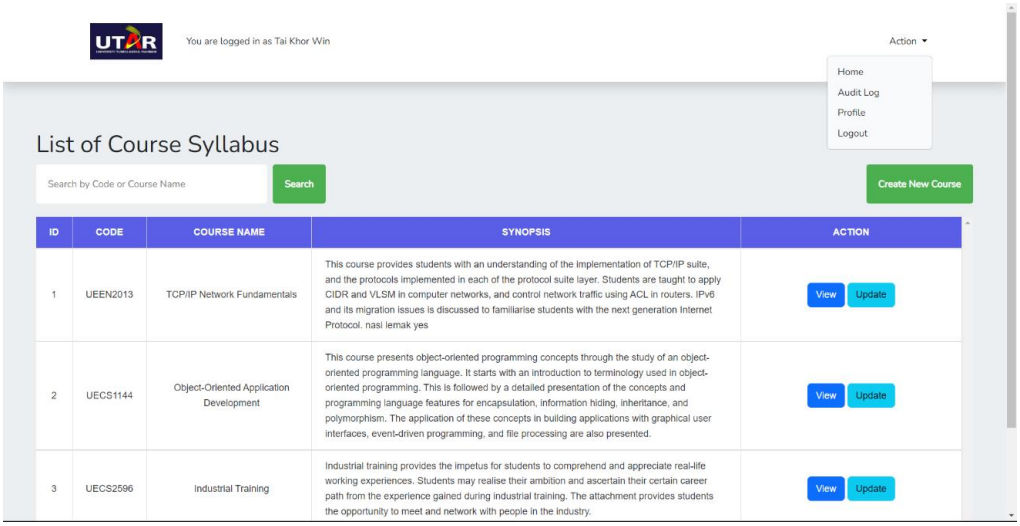


Figure 5.4 Authenticated home page for lecturer

5.4 Profile Management

A user's profile page contains some of their personal data, which may include the following information:

- Name
- Email address
- Password
- Role

User allows to edit their profile information by clicking the button located on the right of the information.

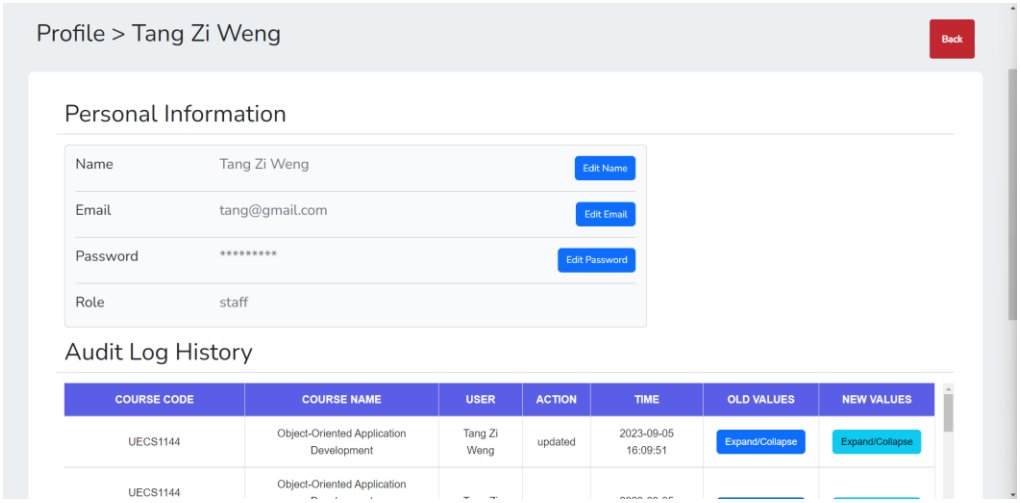


Figure 5.5 Profile page

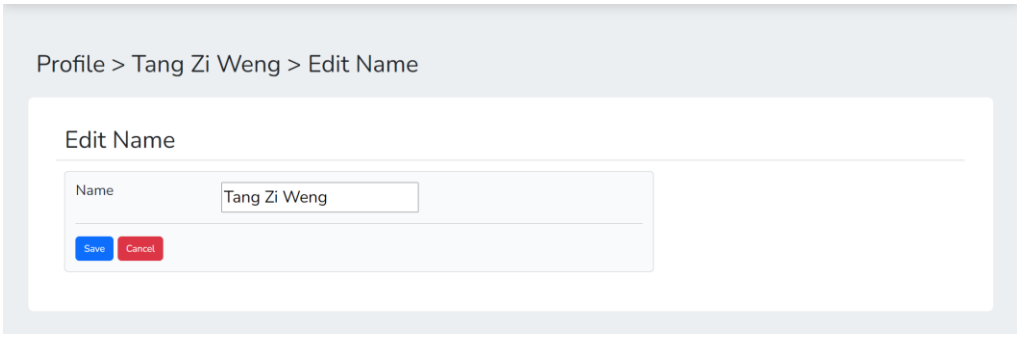


Figure 5.6 Edit name page

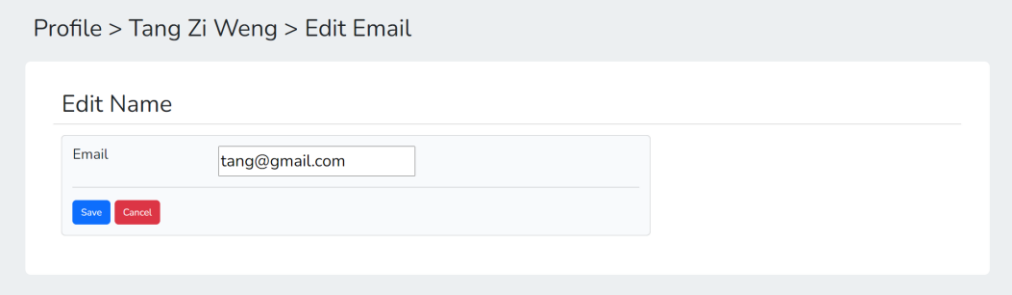


Figure 5.7 Edit email page

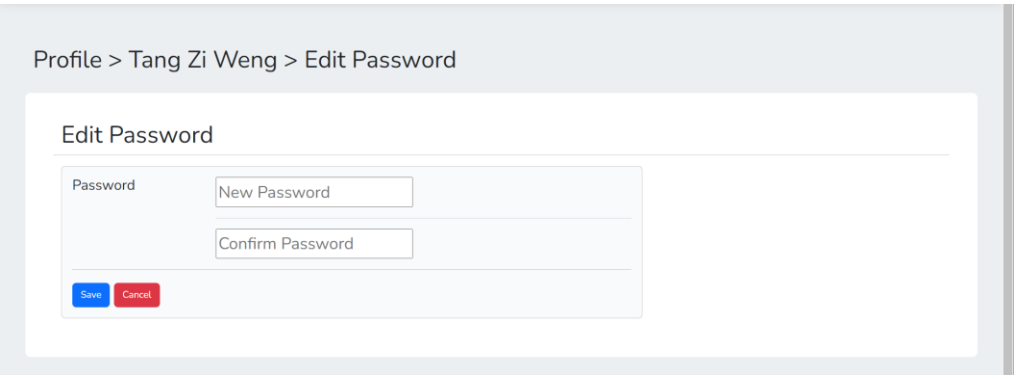


Figure 5.8 Edit password page

5.5 Course Syllabus Management with CRUD Operation

The portal allows staff and lecturers to perform CRUD operations which include creating, reading, updating, and archiving actions. Each user can create several course syllabi as they want.

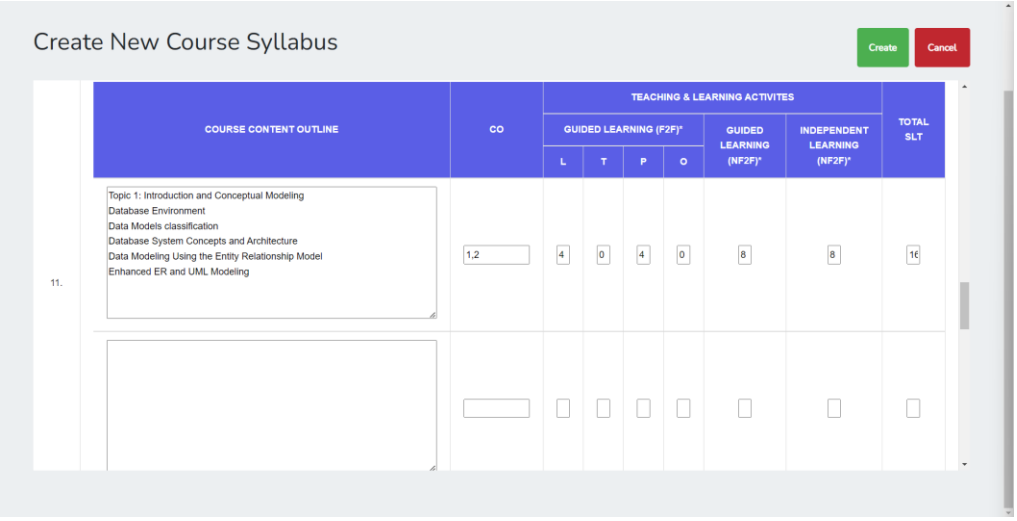


Figure 5.9 Create course syllabus page

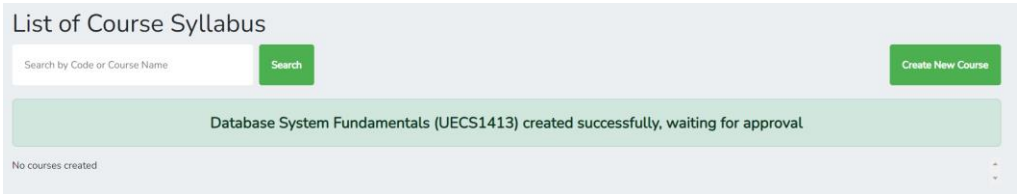


Figure 5.10 Successful message for user action

Once the lecturer/ staff creates the course syllabus, it will not show in the main list of course syllabi. Only staff can view the pending course syllabus.

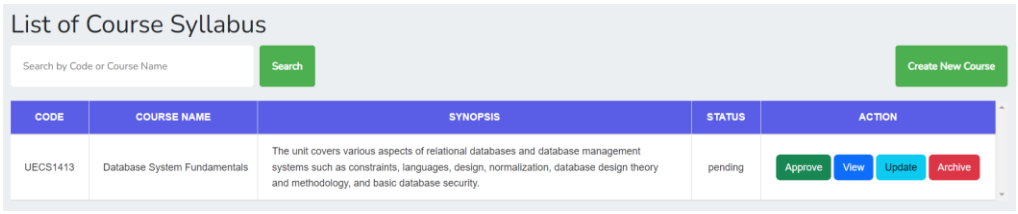


Figure 5.11 Pending list of course syllabus

The staff has the extra functionality to check on the pending course syllabus. They can either perform view, update, or archive operations. Once the pending course syllabus is approved, the course syllabus will be shown in the main list of course syllabi which is accessible for both lecturer and staff.

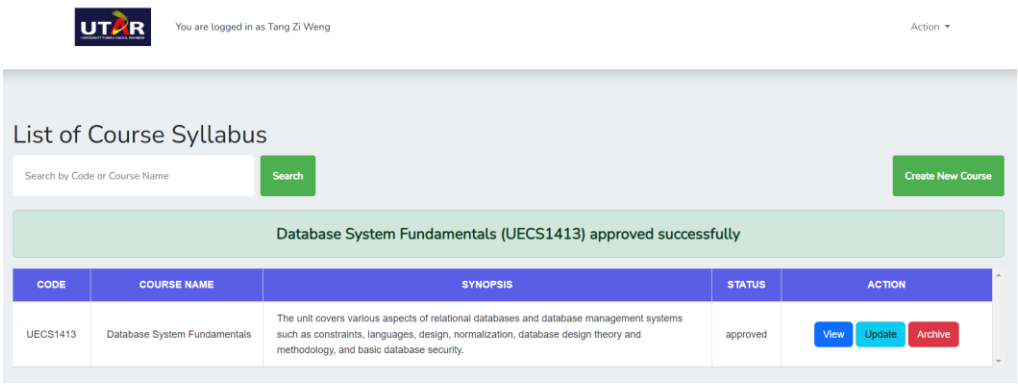


Figure 5.12 Main list of the course syllabus

The approved course syllabus shows the approved status in the main list of course syllabi.

Figure 5.13 Approved list of course syllabus

Users are allowed to review the created course syllabus when they click on the view button on each course syllabus.

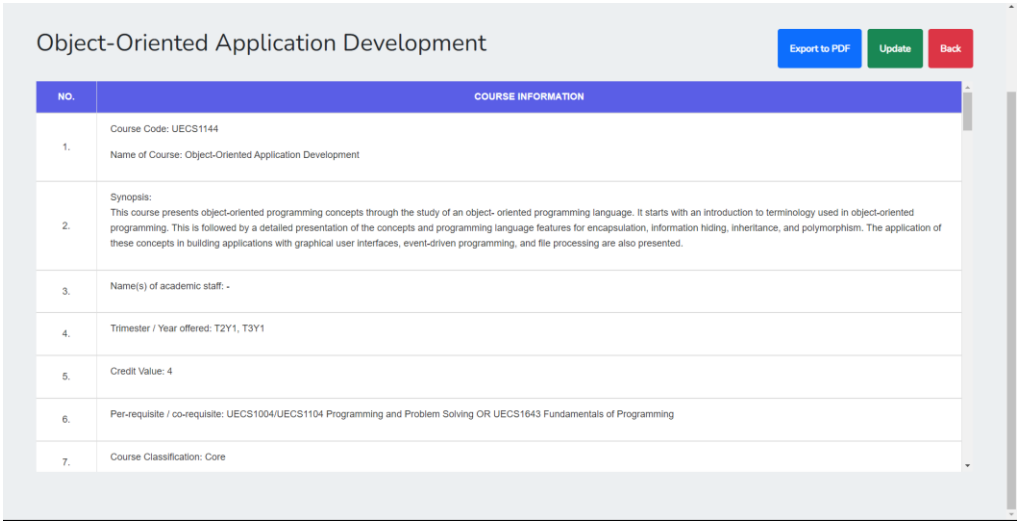


Figure 5.14 Review page of course syllabus

All the information in the created course syllabus can be amended when needed.

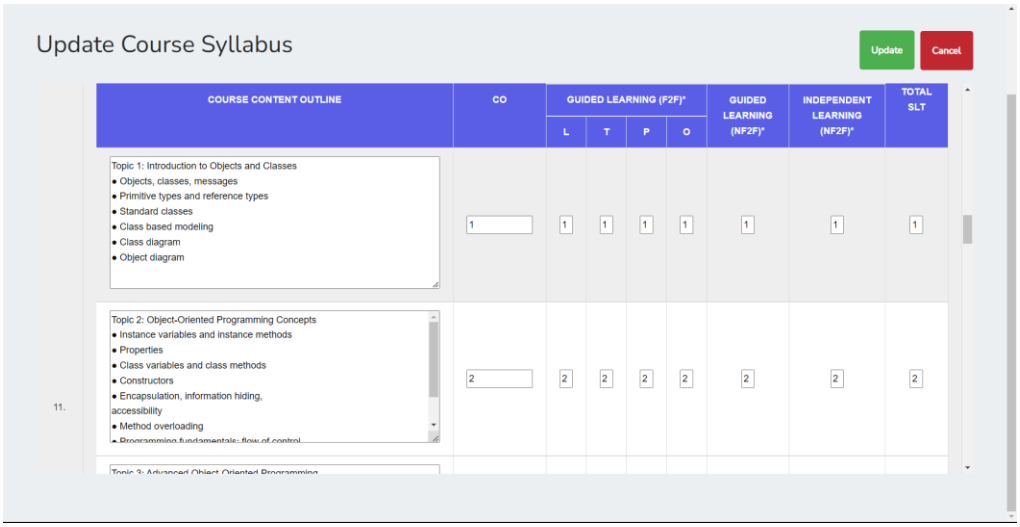


Figure 5.15 Update Course Syllabus

The system will capture the field with a null value and prompt the user to enter the valid details.

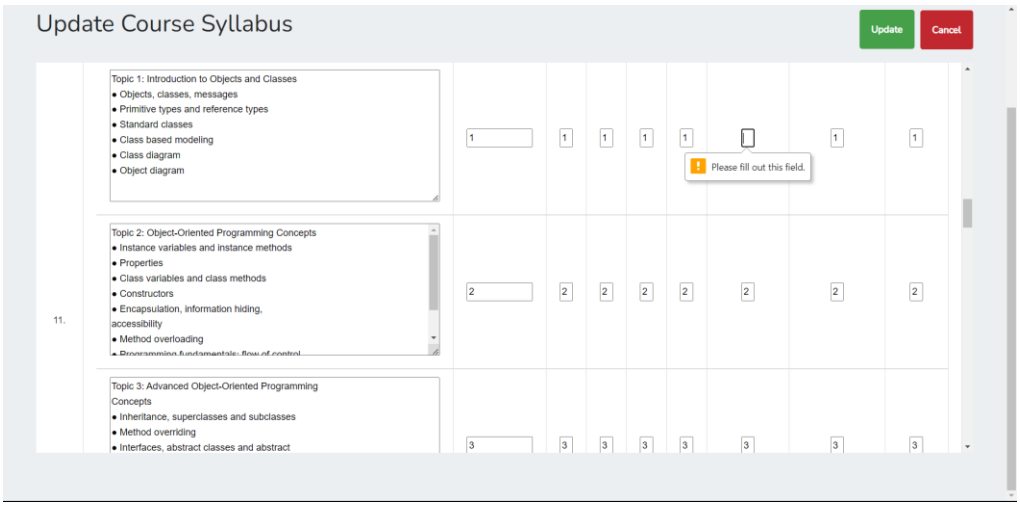


Figure 5.16 Notification for errors

A popup window will appear when the user with a staff role decides to archive the created course syllabus.

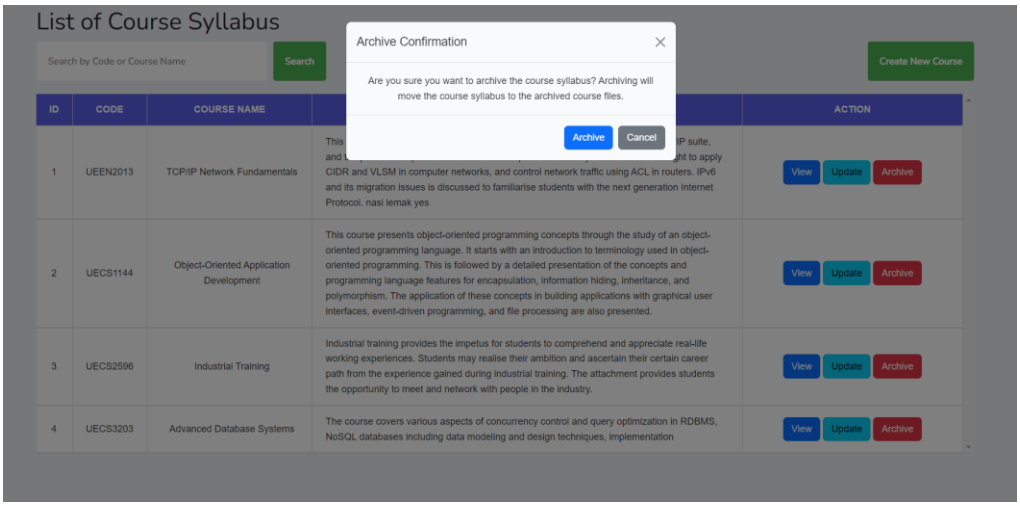


Figure 5.17 Popup notification for archive function

A flash session displays the message of archiving the course syllabus successfully.

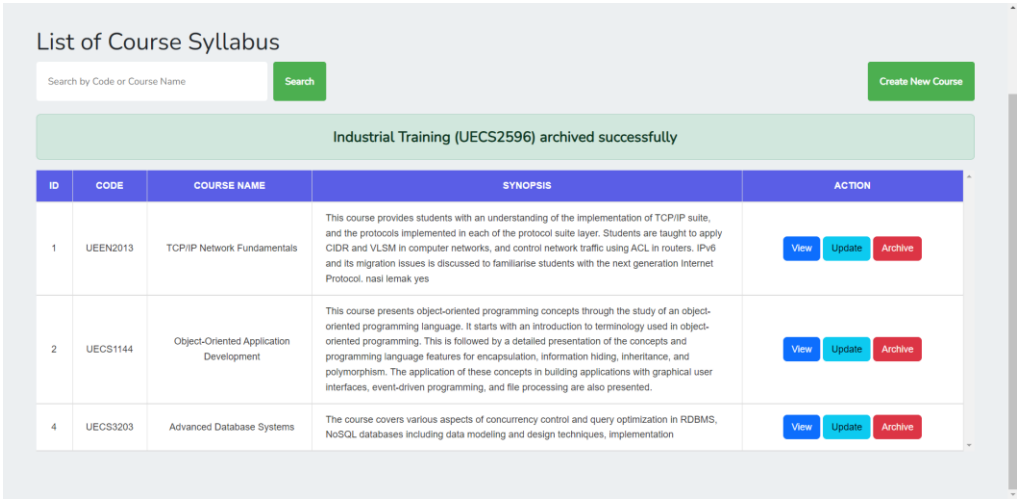


Figure 5.18 Notification for Archive Action

In the archived course page, the system displays the archived course syllabus list with a restore button. Users can restore the course syllabus anytime if necessary.

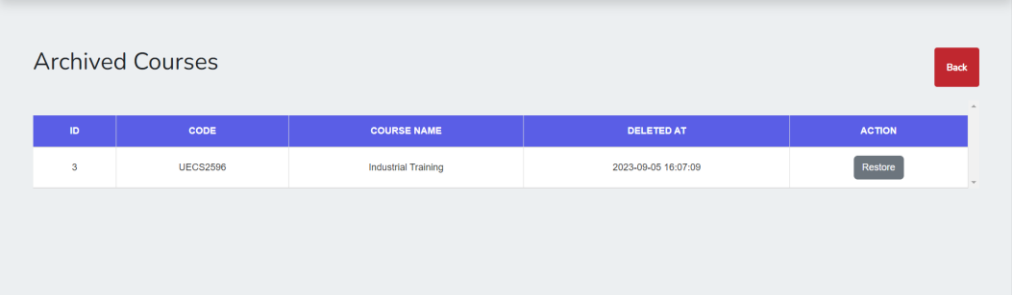


Figure 5.19 Archive course page

Figure 5.20 Notification for restore action

5.6 Audit Log History

All the actions done by users will be recorded and displayed on the audit log page. The actions that are recorded in the audit log include the create, update, delete, and restore operations. According to Figure 5.13, the user changed the

details of the course content outline.

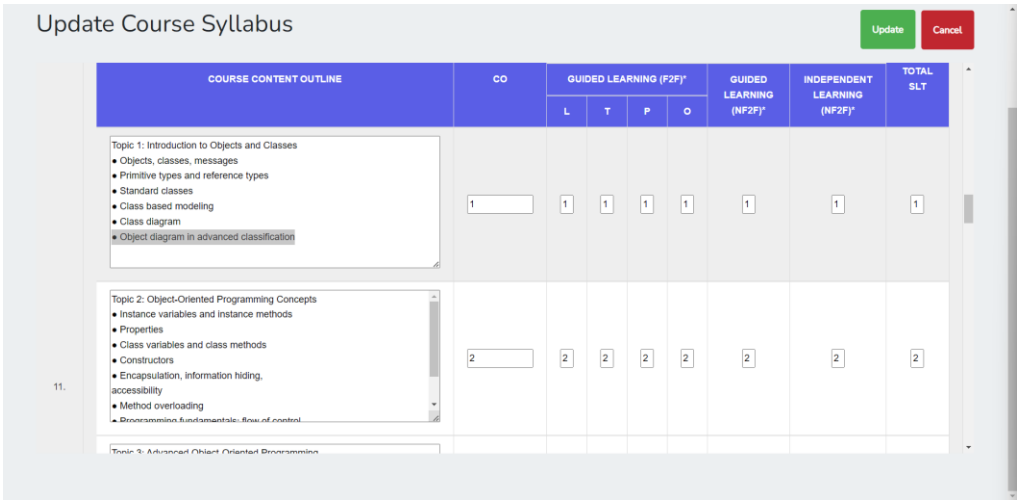


Figure 5.21 Changes made by Users

The audit log captures user actions and displays them on the audit log page, including the course code, course name, the user who performed the actions, the timestamp, and the comparison of the old values with the new values.

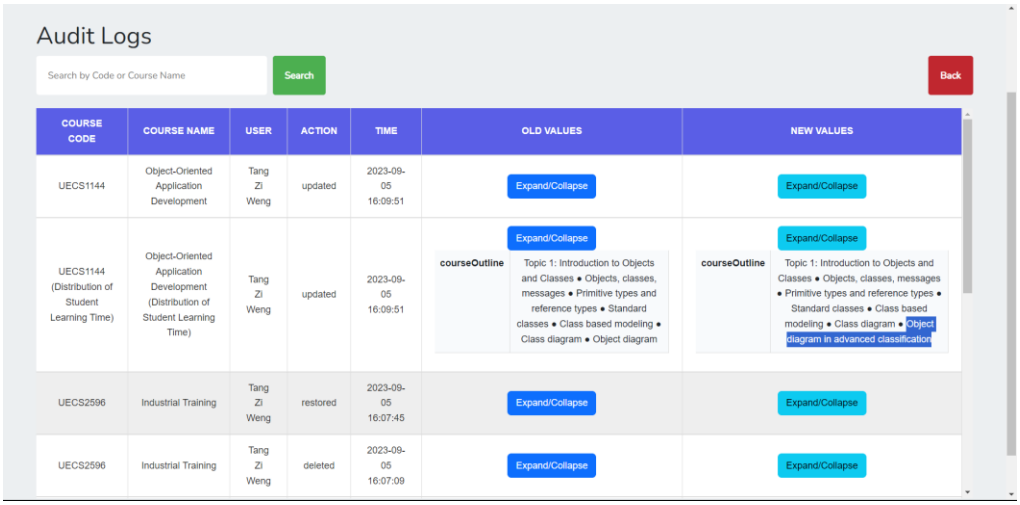


Figure 5.22 Audit logs page

5.7 Searching Course Syllabus and Audit Record

A search bar is available for users to look up specific course syllabi by entering the course code and course name.

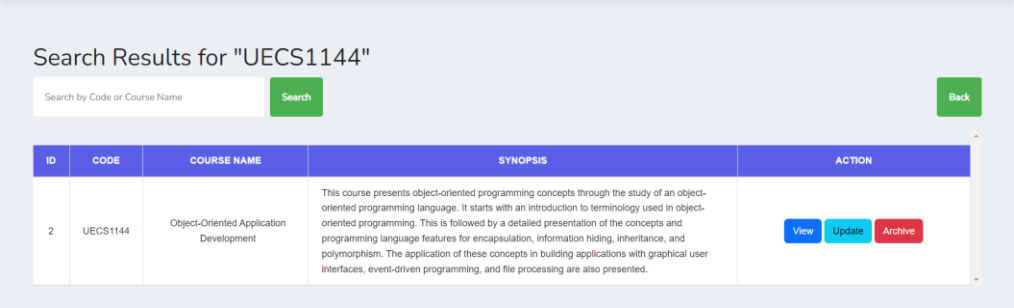


Figure 5.23 Search result of the course syllabus

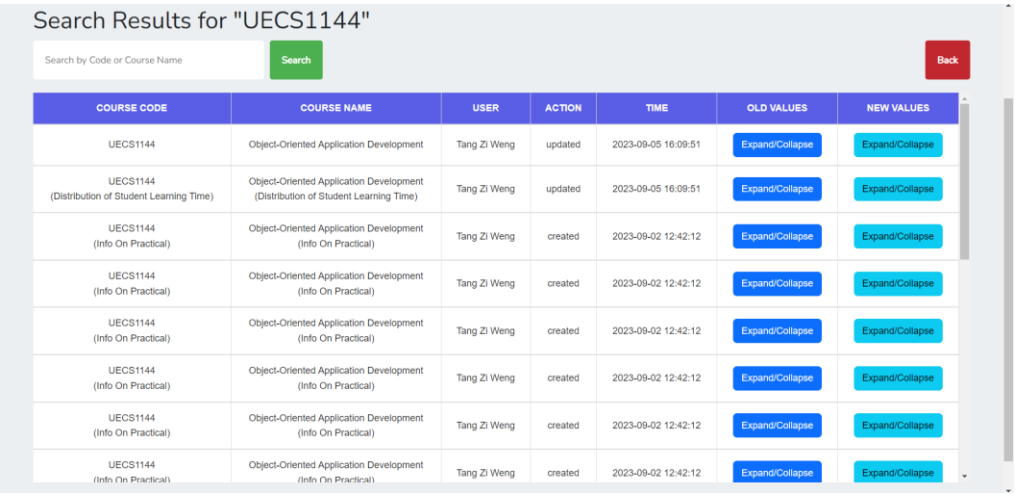


Figure 5.24 Search result of course syllabus part 2

Upon entering a course code or course name that does not correspond to any existing course syllabus, the system will present a message stating, 'No courses found matching'.

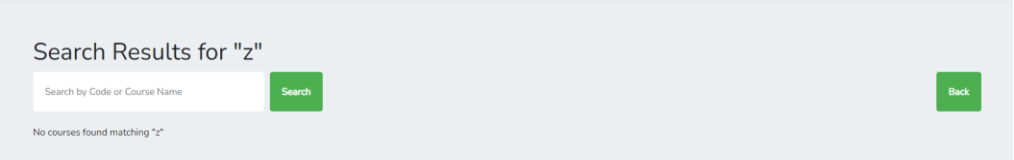


Figure 5.25 Search result for course syllabus part 3

5.8 Export PDF File

'Export to PDF' functionality enables users to convert course syllabi into PDF files, which are universally compatible and can be shared with others, guaranteeing efficient course information distribution. 'mPDF' library is used for generating PDF documents from HTML content, including nested tables. It can be a suitable tool for generating PDFs for course syllabi that contain nested tables.

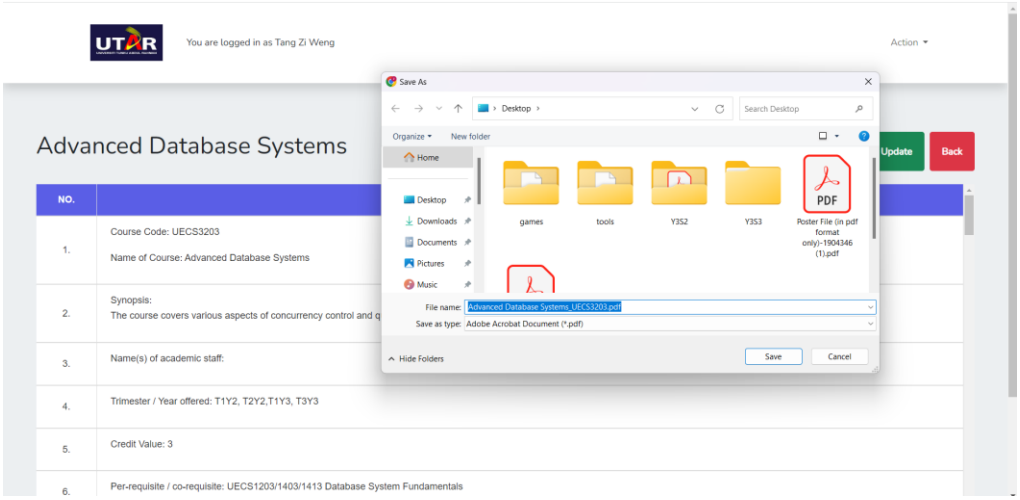


Figure 5.26 Export course syllabus part 1

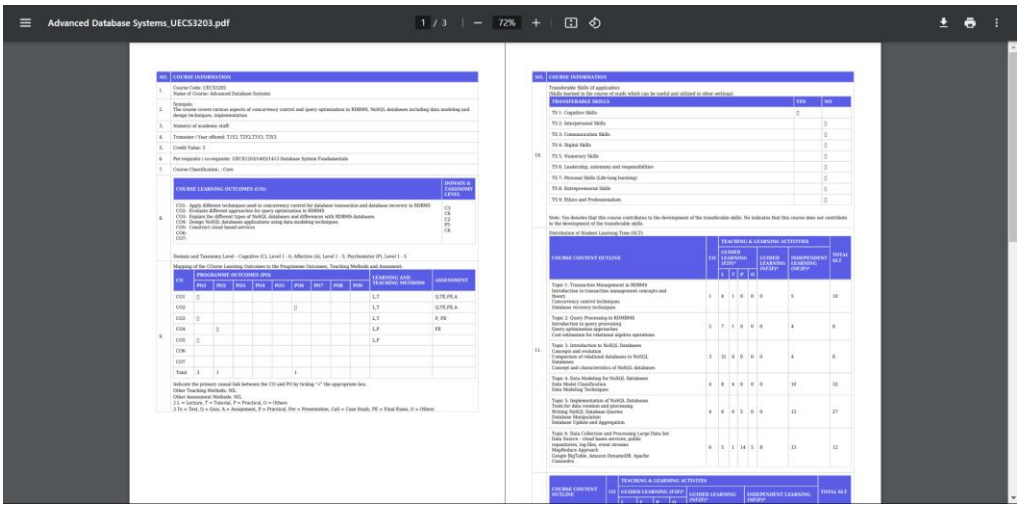


Figure 5.27 Result of exported course syllabus

5.9 Deployment to GitHub

Deploying the LKC FES Syllabus Management Portal to GitHub is a critical step to ensure accessibility, version control, and collaborative development. The deployment process to GitHub is present in the table shown below:

No	Description
1	Create a GitHub repository - Create a new repository on GitHub to host the project
2	Clone the Repository with the command - Create a local copy of the GitHub repository using the 'git clone' command
3	Navigate to the project directory - Move to the directory where the project files are stored after cloning
4	Create a new branch and commit in the origin of the branch - Create a new branch in the local repository and make the necessary changes
5	Make code changes - Modify code to the project
6	Stage and commit changes - Prepare changes for submission by staging with the 'git add .' command and commit them
7	Push to GitHub repository - Push the committed changes back to the GitHub repository using the 'git push' command
8	Checkout branch and merge with the branch with the main - Switch back to the main branch and merge the branch into the main branch using the 'git merge' command

Table 5.2 Deployment process to GitHub

5.10 Database Design

To keep the database structure consistent and well-organized, this project take advantage of Laravel's migration and seeders. Migration handle schema changes, ensuring the database adapts to the evolving needs of the application. Seeders populate important tables, such as the default user account. This approach ensures the database remains tidy and in sync with the changing requirements in the portal.

5.11 System Deployment

In this project, DirectAdmin is used as the web hosting control panel to deploy a Laravel-based website to the public. I uploaded my project files and created a database effortlessly through DirectAdmin's intuitive interface. With DirectAdmin, scheduling jobs for automated tasks was straightforward, and I appreciate the convenience of monitoring server performance and setting up regular backups for peace of mind. This control panel has made deploying my Laravel project (LKC FES Syllabus Management Portal) a smooth and efficient experience.

Table 5.3 DirectAdmin Logo

5.12 Conclusion

In short, the LKC FES Syllabus Management Portal has been created to meet the specific requirements of the faculty's employees and lecturers. Staff members handle administrative tasks like archiving and restoring syllabi, while lecturers focus on creating and managing course content. The portal's authentication system ensures secure access for each role. CRUD operations, audit logs, profile management, and effective search are some of its

characteristics. Moreover, users have the option of exporting syllabi to PDF files for convenient distribution and reference.

CHAPTER 6

TESTING

6.1 Overview

This chapter provides an overview of the testing performed on the implemented system and the evaluation of the test results. The testing activities for this project encompassed unit tests, integration tests, and user acceptance testing.

6.2 Unit Test

Unit testing is a method of software testing used in software development to assess distinct program elements or units. A number of tests have been run with the goal of identifying as many faults as possible and fixing them before they do any significant harm. It ensures the confirmation that the system is accurate and that it complies with the given guidelines. To ensure that every component of the portal functions as expected, multiple test cases are created.

1. Login Account

Test Case ID	Test Case	Expected Output	Status
UTC001	The user logs in account with a valid email address but an invalid password.	The system denies the login access, displaying an invalid email or password.	Pass
UTC002	The user logs in account with a valid password but an invalid email address.	The system denies the login access, displaying an invalid email or password.	Pass
UTC003	The user logs in account with a	System allows the login access and	Pass

	valid email address and password.	redirects to the home page of the portal.	
UTC004	The user logs in account without entering any values.	The system provides a notification to remind users to fill out the field.	Pass
UTC005	The user logs in account with the wrong email address format (lack of @ symbol)	The system provides a notification to remind users to include an '@' symbol in the email address.	Pass

Table 6.1 Unit test - Login Account

2. Authentication

Test Case ID	Test Case	Expected Output	Status
UTC006	The user with a staff role logs in to the account.	The system redirects to the staff home page.	Pass
UTC007	The user with the lecturer role logs in to the account.	The system redirects to the lecturer's home page.	Pass

Table 6.2 Unit test - Authentication

3. Create Course Syllabus

Test Case ID	Test Case	Expected Output	Status

UTC005	Staff create a new course syllabus	The course syllabus was created successfully and waiting for approval.	Pass
UTC006	Lecturers create new course syllabi	The course syllabus was created successfully and waiting for approval.	Pass
UTC007	Users (staff and lecturer) create course syllabi without entering data in the field that is required to be filled out.	The system provides a notification to remind users to fill out the field.	Pass
UTC008	Users (staff and lecturer) add a row in part 11 of the CRF template (distribution of student learning time).	Users added rows successfully in part 11 of the CRF template (distribution of student learning time).	Pass
UTC009	Users (staff and lecturer) remove a row in part 11 of the CRF template (distribution of	Users remove the row successfully in part 11 of the CRF template (distribution of	Pass

	student learning time).	student learning time).	
UTC010	Users (staff and lecturer) add a row in the last part of the CRF template (information on practical).	Users add rows successfully in the last part of the CRF template (information on practical).	Pass
UTC011	Users (staff and lecturer) remove the row in the last part of the CRF template (information on practical).	Users remove rows successfully in the last part of the CRF template (information on practical).	Pass

Table 6.3 Unit test - Create Course Syllabus

4. Review the Created Course Syllabus

Test Case ID	Test Case	Expected Output	Status
UTC012	Staff view pending course syllabus created by staff and lecturer.	The main list of course syllabi of staff view shows all the pending and approved course syllabi.	Pass
UTC013	The lecturer is not allowed to view the pending course syllabus	The main list of course syllabi of the lecturer view shows only the	Pass

	before approval by staff.	approved course syllabus.	
UTC014	The lecturer and staff review the details in the created and approved course syllabus.	The system displays all the data in the approved course syllabus created by users (staff and lecturer).	Pass

Table 6.4 Unit test - Review Created Course Syllabus

5. Search Function for Course Syllabus and Audit Log Record

Test Case ID	Test Case	Expected Output	Status
UTC015	Staff searches both pending and approved course syllabi by using course code and course name.	The system displays the pending and approved course syllabus matched with the keyword (course code and course name).	Pass
UTC016	Lecturer searches approved course syllabi by using the course code and course name.	The system displays the approved course syllabus matched with the keyword (course code and course name).	Pass

UTC017	Users (staff and lecturer) search the course syllabus without entering any keyword (course code and course name).	The system displays all the course syllabi.	Pass
UTC018	Users (staff and lecturer) search course syllabi with unmatched keywords (course code and course name).	The system shows a message “No courses found matching the keyword”.	Pass
UTC019	Users (staff and lecturer) search audit log records by using the course code and course name.	The system displays the audit log records matched with the keyword (course code and course name).	Pass
UTC020	Users (staff and lecturer) search audit log records without entering any keyword (course code and course name).	The system displays all the audit log records.	Pass
UTC021	Users (staff and lecturer) search	The system shows a message “No	Pass

	audit log records with unmatched keywords (course code and course name).	audit log found matching the keyword".	

Table 6.5 Unit test - Search Function for Course Syllabus and Audit Log Record

5. Update Course Syllabus

Test Case ID	Test Case	Expected Output	Status
UTC022	Users (staff and lecturer) make changes to the created course syllabus.	Course syllabus updates successfully and displayed in the main list of course syllabi.	Pass

Table 6.6 Unit test - Update Course Syllabus

6. Keep Track of the Changes of Course Syllabus

Test Case ID	Test Case	Expected Output	Status
UTC023	Users (staff and lecturer) keep track of the changes on the course syllabus.	The system displays all the audit log records performed by users including created, updated deleted, and restored actions.	Pass

Table 6.7 Unit test - Keep Track of the Changes in Course Syllabus

7. Modify Account Details

Test Case ID	Test Case	Expected Output	Status
UTC024	Users (staff and lecturer) edit personal information including name, email address, and password.	Users (staff and lecturer) edit personal information successfully and the latest personal information is stored in the database.	Pass
UTC025	Users (staff and lecturer) logging accounts with updated personal information.	Users (staff and lecturer) login account successfully.	Pass

Table 6.8 Unit test - Modify Account Details

8. Export Course Syllabus

Test Case ID	Test Case	Expected Output	Status
UTC026	Users (staff and lecturer) export course syllabus to PDF file.	The course syllabus is exported as a PDF file and shows all the data in the course syllabus.	Pass

Table 6.9 Unit test - Export Course Syllabus

9. Archive and Restore Course Syllabus

Test Case ID	Test Case	Expected Output	Status
UTC027	Staff archive the course syllabus from the main list of course syllabi.	Course syllabus archived successfully and stored in archived course file.	Pass
UTC028	Staff restored the archived course syllabus from the archived course file.	The archived course syllabus was restored successfully and placed back on the main list of course syllabi.	Pass

Table 6.10 Unit test - Archive and Restore Course Syllabus

10. Approve Course Syllabus

Test Case ID	Test Case	Expected Output	Status
UTC029	Staff approves the pending course syllabus created by users (staff and lecturer).	Staff approved the pending course syllabus successfully and the pending status turned to approved.	Pass

Table 6.11 Unit test - Approve Course Syllabus

6.3 User Acceptance Test

User Acceptance Test is one of the stages of the software testing process, during which customers or end users evaluate and validate the program to determine if it satisfies their unique demands and requirements. In this project

Name of Tester	Sugumaran a/l Nallusamy (Supervisor)		
Date Tested	6th September 2023		
User Role	Staff, Lecturer		
Test Cases	Test Description	Status (Pass/Fail)	Comments
Login Account	The user is able to log in account.	Pass	
Create a New Course Syllabus	Users are able to create new course syllabi and store them in the list of course syllabi.	Pass	
Review Created Course Syllabus	Users are able to review the created course syllabus in the list of course syllabi.	Pass	
Update Created Course Syllabus	Users are able to amend the data in the created course syllabus and update it.	Pass	Any updates must be approved by the staff before appearing in the main list

Archive Course Syllabus	Users are able to archive the created course syllabus.	Pass	
Restore Course Syllabus	The user is able to restore the archived course syllabus back to the list of course syllabi.	Pass	
Search Course Syllabus	Users are able to search the course syllabus using the course code and course name.	Pass	
Review Audit Log Record	The user is able to review the audit log record.	Pass	
Search Audit Log Record	Users are able to search the audit log record using the course code and course name.	Pass	
Modify Profile Information	User is able to modify their profile information (name, email address, and password).	Pass	

Login Account with Latest profile information	The user is able to log in to the account using the amended profile information.	Pass	
Export Course Syllabus	The user is able to export the created course syllabus to a PDF file.	Pass	

Table 6.12 User Acceptance Test 1

Name of Tester	Faranak Nejati (Moderator)		
Date Tested	4/10/2023		
User Role	Lecturer		
Test Cases	Test Description	Status (Pass/ Fail)	Comments
Login Account	The user is able to log in account.	Pass	
Create a New Course	Users are able to	Pass	The UI need to be revised. Some of the text boxes are not aligned.

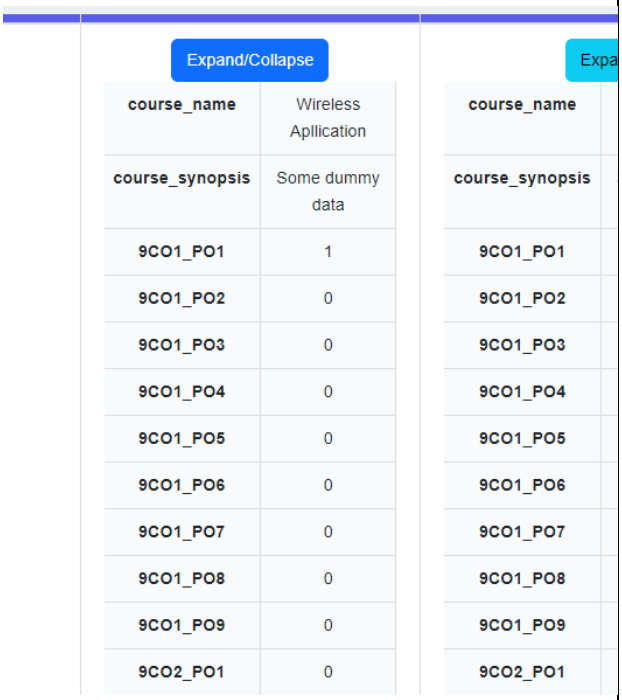
Syllabus	create new course syllabi and store them in the list of course syllabi.		When I create a first course syllabus, then in audit log, there was multiple lines for creating that syllabus. Refer to the following figure:  For some cells in the tables which have options like “LEARNING AND TEACHING METHODS”, it would be better to have a drop-down list, then we can easily choose from there instead of typing. It is the same for the dates and hours field. Some of the fields that must be a number, user still key in letters too. It would be better if limit those fields.
Review Created Course Syllabus	Users are able to review the created course syllabus in the list of course syllabi.	Pass	The calculation of all the total fields need to be automatic

<table>
<tr>
<td>Update Created Course Syllabus</td>
<td>Users are able to amend the data in the created course syllabus and update it.</td>
<td>Pass</td>
<td>When I create a syllabi, I cannot see it until staff approve it.

But, when I edit a syllabi, I can immediately see the changes without approval from staff! The right behaviour is to approve it from staff first, then the changes will be applied.

I only edit some of the fields. There is a need to test all fiends to make sure all can be updated successfully.

After editing, in audit, I saw that some of the changes have not been done by me, but it has been applied. For example, in the following picture, I did not changed those “0”, but all changed to empty.

 
</td>
</tr>
<tr>
<td>Archive</td>
<td>Users are able</td>
<td>Pass</td>
<td></td>
</tr>
</table>

Course Syllabus	to archive the created course syllabus.		
Restore Course Syllabus	The user is able to restore the archived course syllabus back to the list of course syllabi.	Pass	
Search Course Syllabus	Users are able to search the course syllabus using the course code	Pass	

	and course name.		
Review Audit Log Record	The user is able to review the audit log record.	Pass	**Suggestion**: Expand and collapse in all the pages need to be replace by a right widget rather than a button! 
Search Audit Log Record	Users are able to search the audit log record using the course code and	Pass	

	course name.		
Modify Profile Information	User is able to modify their profile information (name, email address, and password).	Pass	The changing password, does not get the current password. For the security reasons, in the process of changing password, it should get the current password first!
Login Account with Latest profile information	The user is able to log in to the account using the amended profile information.	Pass	
Export Course	The user is able to export	Pass	It functioning great, however, it would be better if there would be a better page design.

Syllabus	the created course syllabus to a PDF file.		For example, something similar to our current course syllabus page.

Table 6.13 User Acceptance Test 2

CHAPTER 7

CONCLUSION AND RECOMMENDATION

7.1 Contribution of the Application

The LKC FES Syllabus Management Portal is a valuable application for educational institutions, offering a centralized platform that enhances the creation, updating, and management of course syllabi. With the version control feature, users can easily track changes and updates to ensure data integrity and collaborate on syllabus development. In addition, the application employs role-based access, granting specific permissions to different personnel, and ensuring that only authorized individuals can modify and approve syllabi. The search function simplifies the process of finding syllabi and audit log records based on keywords. By implementing the syllabus management portal for faculties.

7.2 Limitations

The syllabus management portal may not be considered a complete or comprehensive application. It has some limitations as a result of the tight project deadline, which prevented the inclusion of certain functionalities in the application. While the portal offers valuable features for managing the course syllabi, there is room for improvement to enhance its functionality and make it a more comprehensive application.

7.2.1 Automated Calculation Method

Users, in particular faculty staff and lecturers in charge of managing course syllabi are burdened more as a result of the lack of an automated calculating approach. The CRF template must be manually updated with the computed values once each user totals the hours allotted to each component and performs the relevant computation. These procedures might take a lot of time and are prone to human mistake, which might lead to an inaccurate report of the distribution of student learning time (SLT).

7.2.2 Capturing Detailed Audit Log Record

The current audit log's main function is to keep track of the user activity inside the portal, such as course syllabus creation, changes, deletions, and restorations. However, it does not offer a comprehensive document-based history with an adequate level of detail to compare changes to the course syllabus. The lack of a thorough comparison option that shows certain changes made to the course syllabus material is a severe restriction. Users who are in charge of managing the course syllabus need to be able to trace precisely what has been changed, added, or removed in each revision of the syllabus. Without the degree of specificity, it will be slightly difficult to determine how changes will affect things and to guarantee data consistency and correctness.

7.2.3 Fixed CRF Template

Not all courses follow the same structure, and this includes differences in the Course Registration Form template (CRF). Some courses might not even have specific information such as the information on practical, which could be left blank in the existing template. Sometimes, users are required to input information on the section, even if the course does not have them. For instance, users might be forced to enter placeholders like the '-' symbol to indicate the absence of practical components, which is not an optimal solution.

7.3 Recommendations for Future Work

Even though the project has solved the challenges associated with tracking changes in course syllabi, there is still room for improvement in a few aspects of the system.

1. Automated Calculation Method

Future updates may provide an automatic calculation mechanism despite the capability to calculate and enter the total national hours for student learning time (SLT). With this improvement, users would no longer need to manually add up the different components (Lecture, Tutorial, Practical, Online, Guided learning,

Independent Learning), calculate the total number of SLTs, etc. Automation would not only reduce the likelihood of human errors but also streamline the data entry process.

2. Capturing Detailed Audit Log Record

Future work should focus on documenting specific modifications made to the course syllabi in order to give a more thorough audit trail. The audit record might be improved in this way to provide a clearer, more detailed picture of how course syllabi have changed over time.

3. More User-Friendly User Interface

The user interface (UI) may be further improved for usability to improve the overall user experience. Future versions should concentrate on enhancing the UI design to make it more user-friendly and effective. This involves simplifying the way users navigate through the system, making the layout of the course information more intuitive, and introducing user-friendly features that do not require extensive guidance. Creating a more user-friendly interface will enhance the overall user experience, making the system easier to use and increasing user satisfaction.

4. Dynamic CRF Templates

A dynamic CRF template system that adjusts to the specifics of each course may be implemented. The system structure and specifications of the course rather than utilizing a set template for all courses. This would remove the need for users to enter pointless or placeholder data and ensure that each course's distinctive features are accurately reflected in the syllabus.

5. Real-time Notification Update

Real-time notification updates can greatly improve user interaction and teamwork inside the system. The incorporation of a notification system that

immediately alerts users to significant actions and changes should be explored in further development. The alerts could cover various events like approval requests, changes made by users, and even newly created course syllabi. By receiving live notifications, users can stay in the loop and interact more effectively, promoting seamless collaboration and communication among staff and lecturers.

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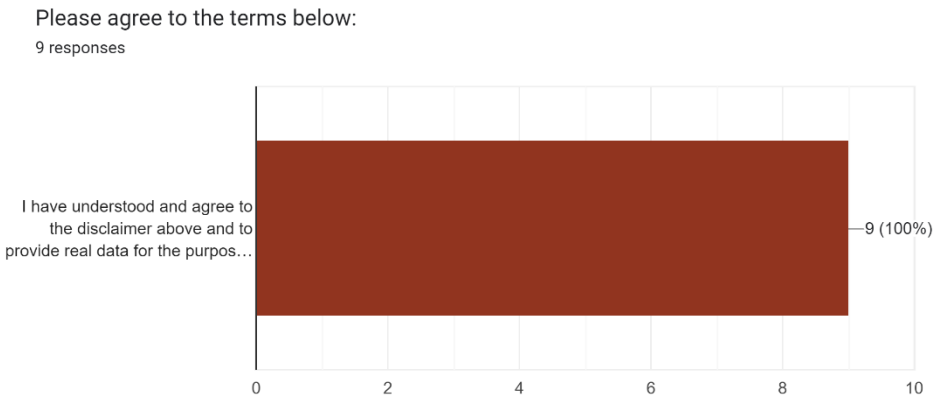
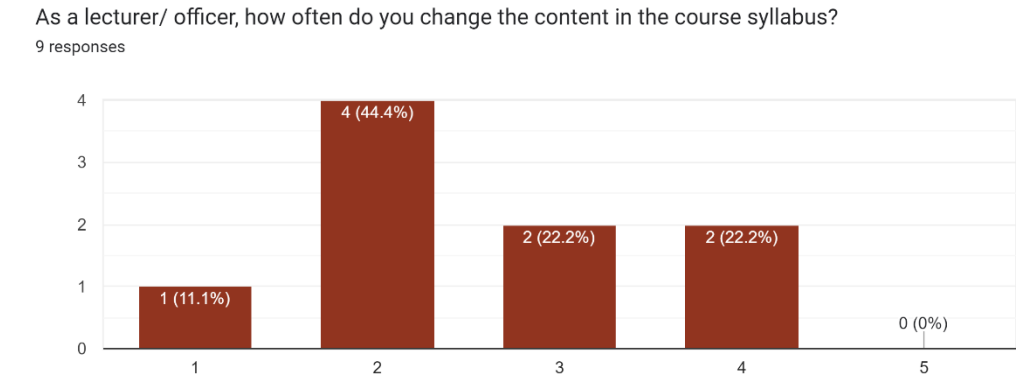
APPENDICES

Appendix A Research Questionnaire

1. As a lecturer/ officer, how often do you change the content in the course syllabus?
2. How easy is it to use the course syllabus to upload and organize course materials?
3. How satisfied are you with the organization and layout of the course?
4. Do you feel that your school or institution provides adequate resources for tracking and accessing course syllabi?
5. How often do you check for updates to a course syllabus?
6. How do you find the most recent version of the course syllabus?
7. What methods do you typically use to locate the most recent version of a course syllabus?
8. Have you ever had difficulty finding the most up-to-date version of a course syllabus?
9. Have you ever missed important information or changes in a course syllabus because you couldn't find the latest version?
10. How have you ever experienced any technical difficulties when using the course syllabus as a lecturer/ officer?
    - Difficult to keep track of the changes in the syllabus information.
    - Unable to track the latest copy.
    - Unable to manage time management for the teaching plan.
    - Other…
11. How important do you think it is for instructors to make the latest version of a course syllabus easily accessible to students?
12. How do you think technology could be used to improve the process of managing and distributing course syllabi?

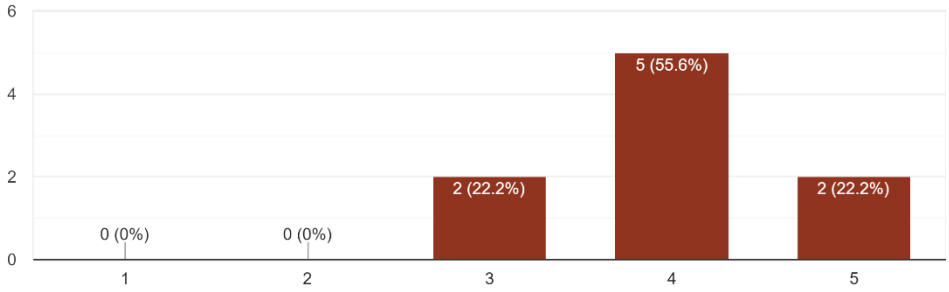
13. In your opinion, what suggestion do you have for improving the process of distributing and tracking changes of the course syllabus?





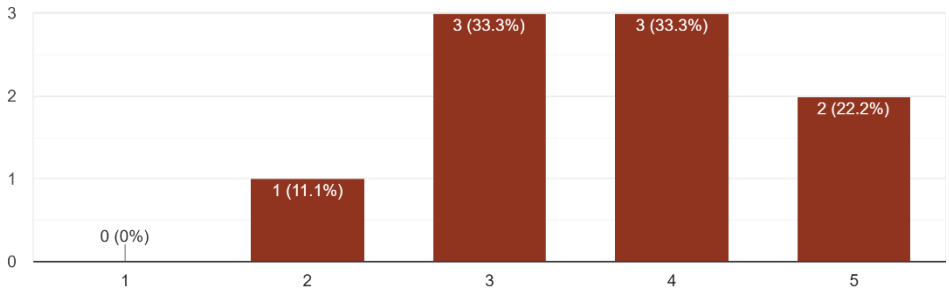
How easy is it to use the course syllabus to upload and organize course materials?

9 responses



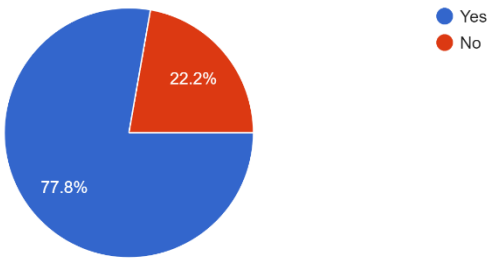
How satisfied are you with the organization and layout of the course?

9 responses



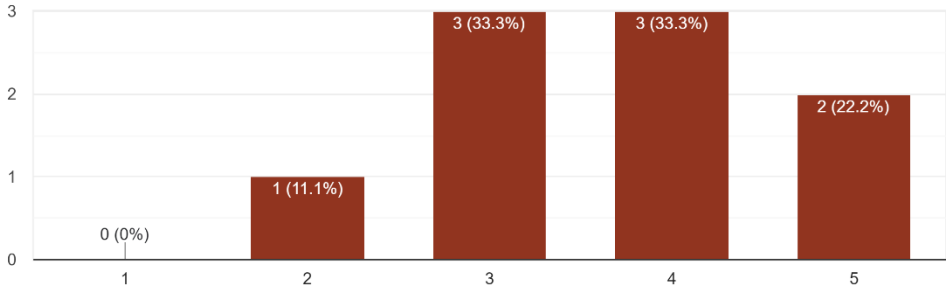
Do you feel that your school or institution provides adequate resources for tracking and accessing course syllabi?

9 responses



How often do you check for updates to a course syllabus?

9 responses



How do you find the most recent version of the course syllabus?

9 responses

- In student portal
- From staff portal
- Programme structure in Web2
- utar portal
- Through UTAR Portal
- Check with colleagues or Head of Department
- UTAR Portal
- OK.
- Informative

What methods do you typically use to locate the most recent version of a course syllabus?

9 responses

Student portal

From staff portal

Web2

utar portal

Check the course syllabus based on latest intake

Via the UTAR portal

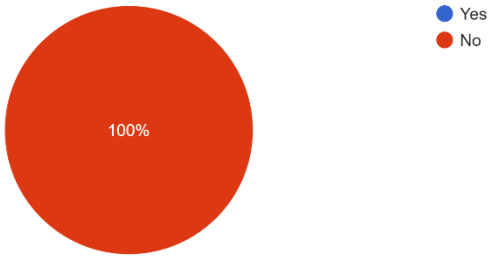
The senate approved date in the syllabus

traditional way with pdf viewer

Store the course syllabi by programme and name the folder according to the trimester and Senate approval date

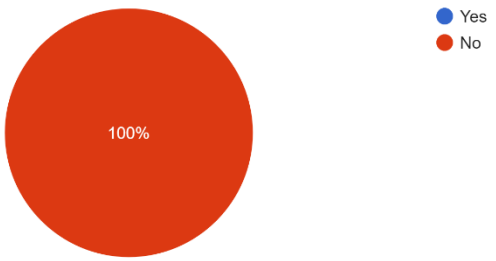
Have you ever had difficulty finding the most up-to-date version of a course syllabus?

9 responses



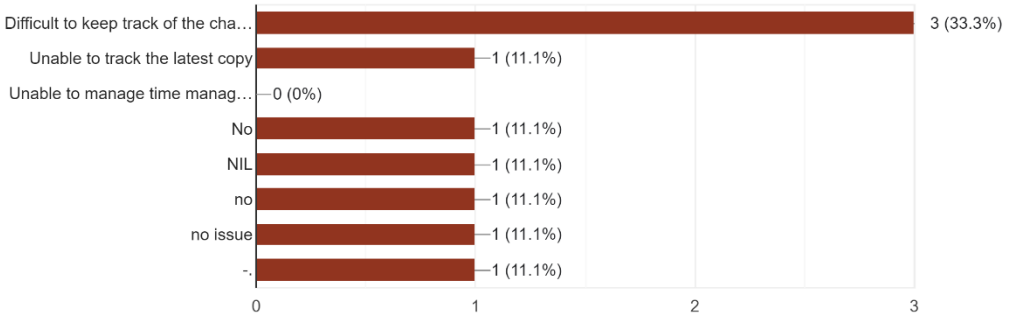
Have you ever missed important information or changes in a course syllabus because you couldn't find the latest version?

9 responses



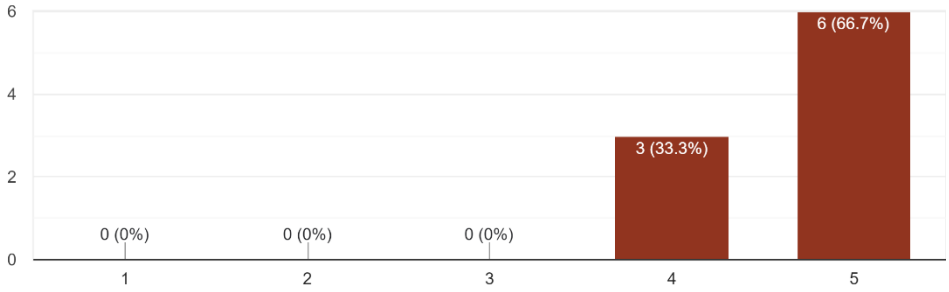
How have you ever experienced any technical difficulties when using the course syllabus as a lecturer/ officer?

9 responses



How important do you think it is for instructors to make the latest version of a course syllabus easily accessible to students?

9 responses



How do you think technology could be used to improve the process of managing and distributing course syllabi?

9 responses

Current platform good enough as it serve as one stop portal to refer all the academic matters that can benefited student & staff.

Tracking the changes made

NA

has some forms using system to allow us easier to change the contents/update the contents in course syllabi instead of using Microsoft words.

User can access the syllabus anywhere

To automate the process of updating and distributing syllabi.

web application

yes

In your opinion, what suggestion do you have for improving the process of distributing and tracking changes of the course syllabus?

9 responses

Current process and procedures already good enough. In term of tracking changes, faculty already have an offline record to capture the changes in course syllabus. All changes reported in university meeting quarterly. Nevertheless, for continual quality improvement purpose, it is good if UTAR have a platform where the offline process can be captured systematically via system.

Centralised system that can be given to users based on their roles

NIL

use a system to manage will be easier than using microsoft words/excel.

i) The idea of version control system can be adopted to manage different versions of syllabus
ii) The idea of review system can be adopted to improve the process of updating the syllabus

An online portal that can be integrated with the existing Staff Portal would be good.

to have change control and version control tracking

Through the visual diagrammatic representation to show the changes according to timeline

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