

# **Software Requirements Specification**

**for**

## **UTM Online System**

**Version 1.0**

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**UTM CDex**

**2 January 2025**

# Table of Contents

1.	Introduction.....	1
1.1	Purpose.....	1
1.2	Document Conventions .....	1
1.3	Intended Audience and Reading Suggestions .....	2
1.4	Project Scope .....	2
1.5	References .....	3
2.	Overall Description .....	4
2.1	Product Perspective.....	4
2.2	Product Features .....	4
2.3	User Classes and Characteristics .....	5
2.4	Operating Environment .....	5
2.5	Design and Implementation Constraints .....	6
2.6	User Documentation .....	6
2.7	Assumptions and Dependencies .....	6
3.	System Features .....	7
3.1	UTM Online System Use Case Diagram .....	7
3.2	UTM Online System Flowchart.....	8
3.3	User Features .....	9
3.4	Students Feature.....	19
3.5	Lecturers Features.....	31
3.6	Admin Feature .....	54
4.	External Interface Requirements.....	73
4.1	Hardware Interfaces .....	73
4.2	Software Interfaces .....	74
4.3	Communications Interfaces .....	74
5.	Other Nonfunctional Requirements.....	75
5.1	Performance Requirements .....	75
5.2	Safety Requirements .....	75
5.3	Security Requirements .....	76
5.4	Software Quality Attributes.....	77
6.	Other Requirements.....	77
	Appendix A: Glossary.....	77

Appendix B: Analysis Models.....78

Appendix C: Issues List .....78

Revision History

Name	Date	Reason for Changes	Version
1. Nabil Ikhwan Bin Sharudin	2 January 2025	Initial release	1.0

# **1. Introduction**

## **1.1 Purpose**

The UTM Online System is a cutting-edge digital platform designed to revolutionize the academic, administrative, and financial processes at Universiti Teknologi Malaysia. It aims to provide a seamless and user-friendly experience for students, lecturers, administrators, and support staff by integrating key functionalities into a unified system. The platform streamlines registration and fee payment processes through an enhanced registration portal, complete with automated billing, payment reminders, multi-currency support, and integration with local and international payment gateways, including e-wallets and online banking options.

To enhance the learning experience, the system incorporates innovative tools such as an immersive 3D virtual campus, enabling interactive exploration and engagement, and the UTM Course Jukebox, which uses AI-driven recommendations to deliver personalized course content, including micro-credentials, MOOCs, and open distance learning programs. Additionally, the system features a Centralized Digital Repository for Academic Credits, accessible via MyAIMS, which allows for efficient academic credit management, credential updates, and program enrollment for both students and external users.

A key component of the system is PRISCILLA, an AI-based advisor that provides personalized academic assistance and guidance. By integrating advanced AI technologies like GPT-4, the system leverages predictive analytics to offer insights into student performance, identify potential challenges, and provide proactive support. This ensures a highly tailored learning and administrative experience, empowering students to achieve their academic goals.

## **1.2 Document Conventions**

The Software Requirement Specification (SRS) document is prepared by using Microsoft Word 2019. This document used standard margin sizes which are 2.54cm on each side. The default font size for the content body is Arial, 11. Heading 1 is Times New Roman with size 18, Heading 2 is Times New Roman with size 14 and Heading 3 is Times New Roman with size 12. Every Heading is Bold. Line Spacing is 1.5 for the whole document. The appearance and flow of the document is organized using a standard IEEE template.

### **1.3 Intended Audience and Reading Suggestions**

This document is generally intended for those who are involved in the development of, or entitled to the UTM Online System, which includes its developers, documentation writers, project owner, and the client. Certain sections of this document are intended for certain groups as mentioned.

### **1.4 Project Scope**

The UTM Online Learning Platform will serve as an integrated online system for university students, lecturers, and administrators. It will allow students to manage their coursework, view grades, track academic progress, and stay updated on upcoming assignments. Additionally, students will be able to use mobile-compatible features like document scanning for submitting assignments. Lecturers will be able to customize grading schemes, manage course materials, assign and grade assignments, and provide feedback to students. Administrators will have the ability to manage user accounts and roles, oversee course creation, and generate academic reports for decision-making. The platform will be accessible through both a web interface for desktop and laptop uses and a mobile app with document scanning capabilities for assignment submission. It will also provide automated reminders and notifications for due dates, enhancing the overall student experience.

**i. User**

The base class for all users, including basic credentials such as username, email, given name, and password. Roles and permissions depend on the user's type.

**ii. Students**

University students aged 18 and older will access course materials, submit assignments, track progress, and interact with instructors for grading and feedback.

**iii. Lecturers**

Lecturers create and manage courses, assign homework, grade assignments, and engage with students through content and assessments.

**iv. Support Staff**

Support staff provide technical assistance, resolve platform-related issues, and ensure smooth use for both students and instructors.

**iii. Admin**

Admins manage platform functionality, control user access, and handle course and user data. They ensure system operations and facilitate system-level management.

## **1.5 References**

references

## **2. Overall Description**

### **2.1 Product Perspective**

The UTM Online Learning Management System (LMS) is a hybrid, multi-platform application designed to revolutionize educational experiences by facilitating seamless interactions among educators, students, and parents. The platform integrates cutting-edge features, including AI-driven grading tools for efficient and accurate assessments, customizable dashboards for real-time progress tracking, and intuitive workflows for streamlined assignment submissions and feedback.

Developed as a modern evolution of Universiti Teknologi Malaysia's (UTM) existing educational infrastructure, UTM Online addresses critical gaps in functionality, resolves limitations in outdated designs, and enhances system performance with a more responsive design and robust infrastructure. By emphasizing scalability and compliance with educational standards, the platform delivers a future-ready environment that fosters collaboration, improves engagement, and ensures accessibility for all users.

### **2.2 Product Features**

The major features of UTM Online include an AI/Natural Language Processing-based assignment grading system that can grade assignments based on a predefined marking scheme. This feature is designed to ease the burden of UTM instructors by automating the grading process and allowing them to review and adjust grades to match their unique grading styles.

Another major feature of this system is its insightful and customizable student performance dashboards tailored to UTM's academic framework. These dashboards provide real-time analytics on student progress, facilitate better communication between lecturers and students, and help identify areas requiring academic intervention or enhancement. Parents can also access progress reports where applicable.

Lastly, UTM Online includes a robust and user-friendly assignment submission system. Students can upload files through drag-and-drop functionality, and the platform integrates a built-in document scanning feature for mobile users. This ensures compatibility with UTM's academic workflows and provides an efficient submission process for both digital and scanned content, eliminating reliance on third-party tools.

## **2.3 User Classes and Characteristics**

### **i. User**

The base class for all users on the system, which includes individuals with basic credentials like username, email, given name, and password. Their roles and permissions will depend on their subscription type.

### **ii. Student**

Students are users aged 18 and older who are enrolled in university or adult education programs. They will use the system for online courses, attending lectures, submitting assignments, engaging with course materials, and receiving grades or feedback from their instructors.

### **iii. Lecturer**

Lecturers, are those responsible for teaching courses. They can assign assignments, grade submissions, provide feedback, and engage with students through course content, discussions, and evaluations.

### **iv. Support Staff**

Support staff assist users with technical issues, account problems, and platform-related queries. They ensure that students and instructors are able to use the system effectively and address any concerns or questions related to the portal.

### **v. Admin**

Admins are system-level users who have full access to manage and control the platform. They can add and manage users, course content, troubleshoot technical issues, moderate discussions, and ensure smooth operation of the system.

## **2.4 Operating Environment**

UTM Online will be deployed on a cloud infrastructure, specifically utilizing a cloud hosting provider with scalable resources to accommodate large numbers of students and faculty. The platform will be hosted on secure Linux virtual machines, leveraging the services of our provider (UTM Digital) to ensure availability and high performance.



## **2.5 Design and Implementation Constraints**

Since UTM Online is designed specifically for university students aged 18 and older, it is not subject to regulations like the Children's Online Privacy Protection Act (COPPA). However, the platform must adhere to applicable data protection laws, such as Malaysia's Personal Data Protection Act (PDPA) and other relevant regional regulations. Compliance includes implementing secure data handling practices, obtaining explicit user consent, ensuring accurate age verification where required, and protecting students' personal information through robust security measures. These efforts are crucial to maintaining trust and safeguarding user privacy.

## **2.6 User Documentation**

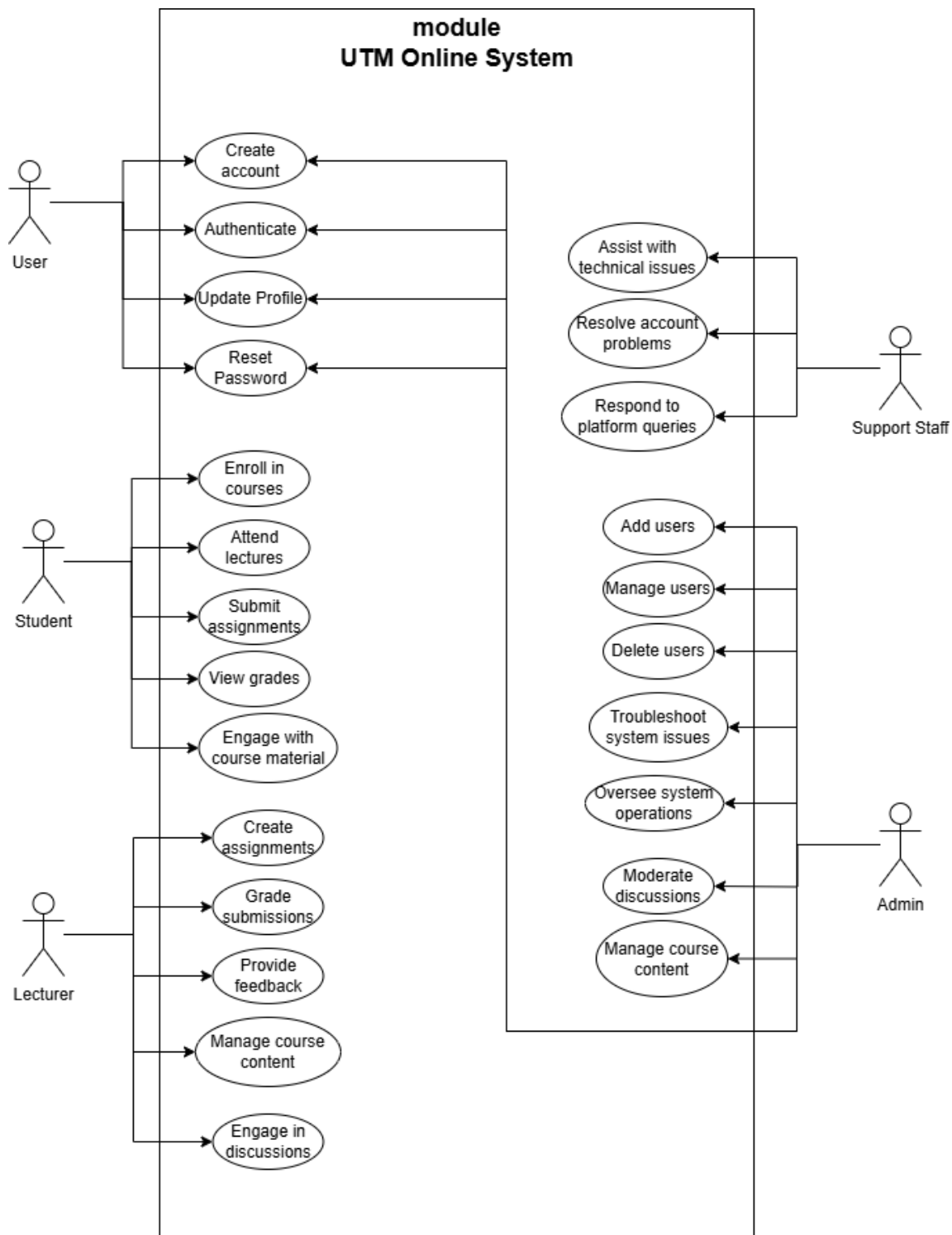
User documentation for UTM Online will be primarily hosted within the web and mobile application itself. The documentation will provide detailed guides on navigating the platform, accessing course materials, submitting assignments, and using all core features. Additionally, troubleshooting resources and FAQs will be available to assist users with common issues and help them make the most out of the system.

## **2.7 Assumptions and Dependencies**

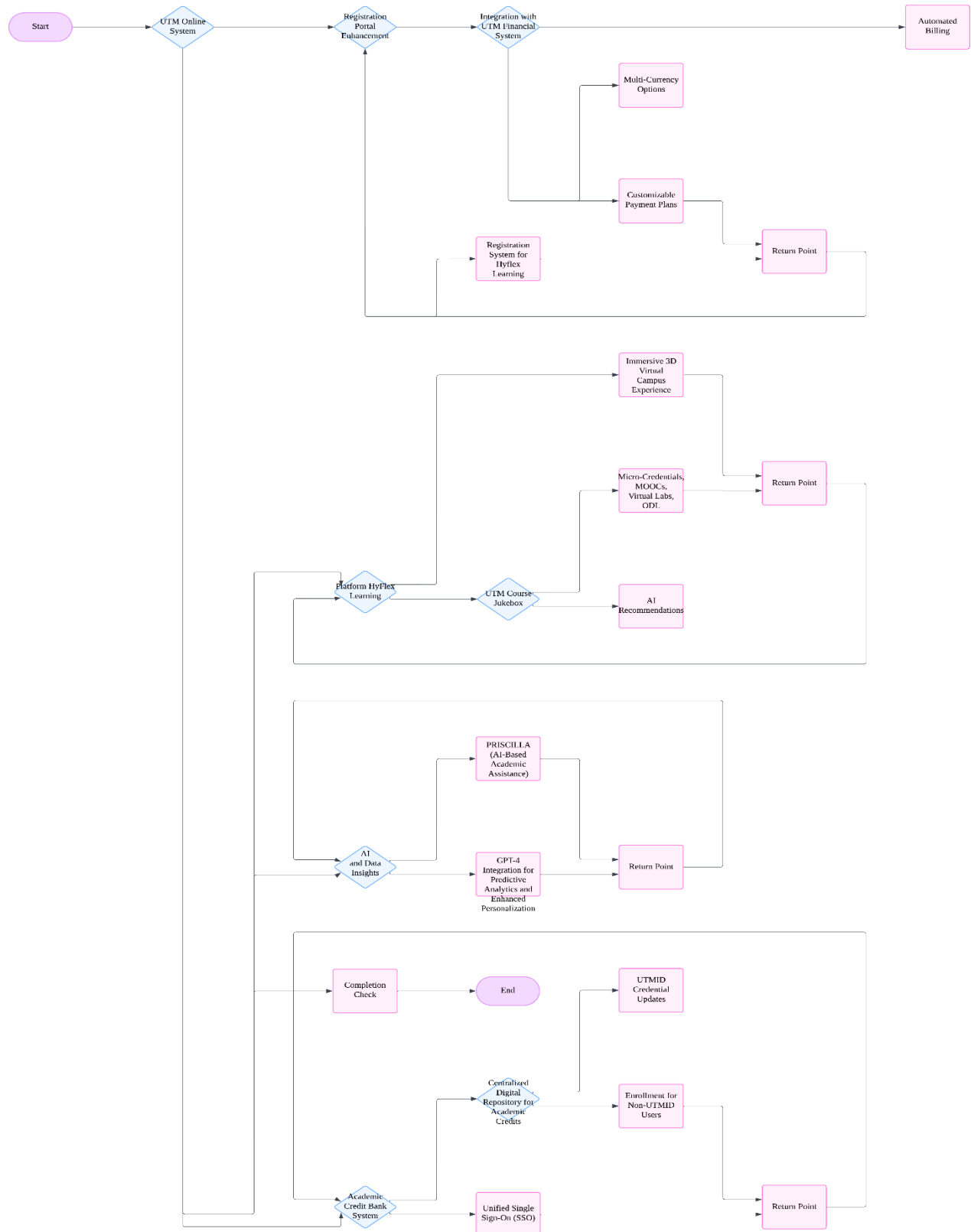
UTM Online System relies on a robust and secure payment gateway for processing fee payments. This gateway integrates seamlessly with both local and international banking systems, facilitating smooth and secure transactions. By leveraging existing payment solutions such as bank APIs and e-wallets (e.g., Pay2UTM, FPX, DuitNow, Flywire, KiplePay), the platform ensures flexibility and convenience for students and users. However, any updates or changes in these external systems or integration APIs could potentially affect the functionality of the payment system. Proactive monitoring and timely updates to these integrations are critical to maintaining uninterrupted service.

### 3. System Features

#### 3.1 UTM Online System Use Case Diagram



### 3.2 UTM Online System Flowchart



### 3.3 User Features

#### 3.3.1 As a user, I want to login so that I can access the UTM Online System

System Name	UTM Online System
Team Id	G03_40
Number #	1
Title	CREATE ACCOUNT (USER)
Description As I want to So that	A user  sign up for an account  I can access the UTM Online System
Priority	High
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
Acceptance Criteria / Confirmation	
<ol style="list-style-type: none"><li>1. Enter username</li><li>2. Enter password</li><li>3. Enter Email</li></ol>	

**3.3.2 As a user, I want to authenticate myself so that I can login to the UTM Online System**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	2
Title	AUTHENTICATION (USER)
Description	
As	A user
I want to	authenticate myself
So that	I can login to the UTM Online System
Priority	High
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
4. Enter username 5. Enter password	

### 3.3.3 As a user, I want to log out of my account so that I can temporarily disable access to my account

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	3
Title	LOG OUT (USER)
Description As I want to So that	A user log out of my account I can temporarily disable access to my account
Priority	High
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
6. User is redirected to login page 7. User is logged out	

### 3.3.4 As a user, I want to view my homepage so that I can easily perform actions on the system

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	4
Title	VIEW HOMEPAGE (USER)
Description As I want to So that	A user  view my homepage  I can easily perform actions on the system
Priority	High
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
8. User can see their respective homepage 9. User can see an overview of their account (Name, username, role, profile picture)	

**3.3.5 As a user, I want to view my account so that I can know my credentials**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	5
Title	VIEW ACCOUNT (USER)
Description	
As	A user
I want to	view my account
So that	I can know my credentials
Priority	High
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
10. User can view their account information	



### 3.3.6 As a user, I want to edit my profile so that I can change my credentials and information

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	6
Title	EDIT PROFILE (USER)
Description As I want to So that	A user edit my profile I can change my credentials and information
Priority	High
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
11. User can change their profile information 12. User can change their credentials (username)	

**3.3.7 As a user, I want to change my password so that I can ensure my account's security**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	7
Title	CHANGE PASSWORD (USER)
Description As I want to So that	A user change my password I can ensure my account's security
Priority	High
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
13. User can change their current password	

**3.3.8 As a user, I want to reset my password so that I can regain access to my account**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	8
Title	RESET FORGOTTEN PASSWORD (USER)
Description As I want to So that	A user  reset my password  I can regain access to my account
Priority	High
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
14. User is sent an email to reset their password 15. User can login with new password	

### 3.3.9 As a user, I want to delete my account so that I can remove my information and access to the system

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	9
Title	DELETE ACCOUNT (USER)
Description As I want to So that	A user delete my account I can remove my information and access to the system
Priority	High
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
16. User cannot access their account anymore	

### 3.3.10 As a user, I want to update my subscription so that I can gain access to the system's features

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	10
Title	UPDATE SUBSCRIPTION (USER)
Description As I want to So that	A user  update my subscription  I can gain access to the system's features
Priority	High
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
17. User has access to features specified	

### 3.4 Students Feature

#### 3.4.1 As a student, I want to view my homepage so that I can stay updated with my classes

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	11
Title	VIEW HOMEPAGE (STUDENT)
Description	
As	A student
I want to	view my homepage
So that	I can stay updated with my classes
Priority	High
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
1. User can view a custom homepage	

### 3.4.2 As a student, I want to view my assignments so that I know what assignment are due or submitted

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	12
Title	VIEW ASSIGNMENT (STUDENT)
Description As I want to So that	A student  view my assignments  I know what assignment are due or submitted
Priority	Medium
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
18. Student can view assignment list 19. Student can view individual assignments	

### 3.4.3 As a student, I want to view my classroom(s) so that I know what classes I am in and what materials are in them

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	13
Title	VIEW CLASSROOM (STUDENT)
Description	
As	A student
I want to	view my classroom(s)
So that	I know what classes I am in and what materials are in them
Priority	Medium
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
20. Student can view their classrooms list 21. Student can view individual classrooms	



#### 3.4.4 As a student, I want to view my submission so that I can double check what I submitted

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	14
Title	VIEW SUBMISSION (STUDENT)
Description As I want to So that	A student  view my submission  I can double check what I submitted
Priority	Medium
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
22. Students can check their submission for an assignment	

### 3.4.5 As a student, I want to view my submission results so that I can know how I scored for my assignment

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	15
Title	VIEW RESULT (STUDENT)
Description As I want to So that	A student  view my submission results  I can know how I scored for my assignment
Priority	Medium
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
23. Student can check results for a submission	

### 3.4.6 As a student, I want to create an assignment submission so that I can submit my assignment for grading purposes

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	16
Title	CREATE SUBMISSION (STUDENT)
Description As I want to So that	A student  create an assignment submission  I can submit my assignment for grading purposes
Priority	Medium
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
24. Student can submit an assignment	

### 3.4.7 As a student, I want to update my assignment submission so that I can fix and redo my assignment

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	17
Title	UPDATE SUBMISSION (STUDENT)
Description As I want to So that	A student  update my assignment submission  I can fix and redo my assignment
Priority	Medium
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
25. Student can modify the contents of their submission	

### 3.4.8 As a student, I want to delete my assignment submission so that I can remove my erroneous submission

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	18
Title	DELETE SUBMISSION (STUDENT)
Description As I want to So that	A student  delete my assignment submission  I can remove my erroneous submission
Priority	Medium
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
26. Student can remove their submission content	

### 3.4.9 As a student, I want to create a PDF Scan so that I don't need to scan from a third-party app

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	19
Title	CREATE PDF SCANS (STUDENT)
Description As I want to So that	A student  create a PDF Scan  I don't need to scan from a third-party app
Priority	Medium
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
27. Student can successfully scan a PDF file	

**3.4.10 As a student, I want to view my grade results so that I know my academic standing**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	20
Title	VIEW RESULTS (STUDENT)
Description	
As	A student
I want to	view my grade results
So that	I know my academic standing
Priority	LOW
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
28. Student can successfully view grade results	

### 3.4.11 As a student, I want to download notes and learning materials so that I can have them ready for classes

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	21
Title	DOWNLOAD NOTES / MATERIALS (STUDENT)
Description As I want to So that	A student  download notes and learning materials  I can have them ready for classes
Priority	LOW
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
29. Student can download classroom materials	



### 3.4.12 As a student, I want to view notes and learning materials so that I can study beforehand for classes

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	22
Title	VIEW NOTES / MATERIALS (STUDENT)
Description As I want to So that	A student  view notes and learning materials  I can study beforehand for classes
Priority	LOW
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
30. Student can view notes	

### 3.5 Lecturers Features

**3.5.1 As a lecturer, I want to create a classroom for my students so that I can teach my students**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	23
Title	CREATE CLASSROOM (LECTURERS)
Description As I want to So that	A lecturer  create a classroom for my students  I can teach my students
Priority	HIGH
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
31. Lecturer can create classrooms	

### 3.5.2 As a lecturer, I want to view my classroom so that I can upload to it and view my students

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	24
Title	VIEW CLASSROOM (LECTURERS)
Description As I want to So that	A Lecturers  view my classroom  I can upload to it and view my students
Priority	HIGH
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
32. Lecturer can view their classroom 33. Lecturers can view each of their classroom	

**3.5.3 As a lecturer, I want to update my classroom so that I can change its information**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	25
Title	UPDATE CLASSROOM (LECTURERS)
Description As I want to So that	A lecturer update my classroom I can change its information
Priority	HIGH
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
34. Lecturers can modify classroom information	

**3.5.4 As a lecturer, I want to delete my classroom so that I can remove my class' data**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	26
Title	DELETE CLASSROOM (LECTURERS)
Description As I want to So that	A lecturer  delete my classroom  I can remove my class data
Priority	HIGH
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
35. Lecturers can remove their classrooms	

**3.5.5 As a lecturer, I want to create an assignment so that I can assign them to my students**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	27
Title	CREATE ASSIGNMENT (LECTURERS)
Description As I want to So that	A lecturer  create an assignment  I can assign them to my students
Priority	HIGH
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
36. Lecturers can create assignments	

**3.5.6 As a lecturer, I want to update my assignment so that I can modify its contents**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	28
Title	UPDATE ASSIGNMENT (LECTURERS)
Description As I want to So that	A lecturer update my assignment I can modify its contents
Priority	MEDIUM
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
37. Lecturers can modify assignment content	

**3.5.7 As a lecturer, I want to delete my assignment so that I can remove its contents**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	29
Title	DELETE ASSIGNMENT (LECTURERS)
Description As I want to So that	A lecturer  delete my assignment  I can remove its contents
Priority	MEDIUM
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
38. Lecturers can remove assignments from classrooms	



### 3.5.8 As a lecturer, I want to view my assignment(s) so that I can check what I have assigned my students

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	30
Title	VIEW ASSIGNMENT (LECTURERS)
Description As I want to So that	A lecturer  view my assignment(s)  I can check what I have assigned my students
Priority	MEDIUM
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
39. Lecturers can view assignment submissions	

### 3.5.9 As a lecturer, I want to view my students' submissions so that I can check their progress on their assignments

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	31
Title	VIEW SUBMISSION (LECTURERS)
Description As I want to So that	A lecturer  view my students' submissions  I can check their progress on their assignments
Priority	MEDIUM
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
40. Lecturers can view each student's submission for an assignment	

### 3.5.10 As a lecturer, I want to grade my students' submissions so that I can let them see their results later on

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	32
Title	SUBMIT GRADING (LECTURERS)
Description As I want to So that	A lecturer grade my students' submissions so that I can let them see their results later on
Priority	MEDIUM
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
41. Lecturers can grade students' submissions	

**3.5.11 As a lecturer, I want to create a grading/marking scheme so that I can set how my assignments are automatically graded**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	33
Title	CREATE GRADE SCHEME (LECTURERS)
Description As I want to So that	A lecturer  create a grading/marking scheme  I can set how my assignments are automatically graded
Priority	MEDIUM
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
42. Lecturers can add their own grading scheme	

### 3.5.12 As a lecturer, I want to update my grading scheme so that I can change how my assignments are automatically graded

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	34
Title	UPDATE GRADE SCHEME (LECTURERS)
Description As I want to So that	A lecturer  update my grading scheme  I can change how my assignments are automatically graded
Priority	MEDIUM
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
43. Lecturers can modify grading schemes	

### 3.5.13 As a lecturer, I want to view my grading scheme so that I can check how my assignments are automatically graded

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	35
Title	VIEW GRADE SCHEME (LECTURERS)
Description As I want to  So that	A lecturer  view my grading scheme  I can check how my assignments are automatically graded
Priority	MEDIUM
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
44. Lecturers can view their grading scheme for every assignment	

### 3.5.14 As a lecturer, I want to delete my grading scheme so that I can remove my automatic grading information

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	36
Title	DELETE GRADE SCHEME (LECTURERS)
Description As I want to So that	A lecturer  delete my grading scheme  I can remove my automatic grading information
Priority	MEDIUM
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
45. Lecturers can remove grading schemes from their assignments	

### 3.5.15 As a lecturer, I want to edit my auto-graded results so that I can grade my assignments according to my specific scheme

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	37
Title	EDIT AUTO GRADED RESULT (LECTURERS)
Description	
As	A lecturer
I want to	edit my auto-graded results
So that	I can grade my assignments according to my specific scheme
Priority	MEDIUM
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
46. Lecturers can edit the results for each submission	



**3.5.16 As a lecturer, I want to add notes and materials to my classroom so that I can give them something to read before/after class**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	38
Title	ADD NOTES / MATERIALS (LECTURERS)
Description As I want to So that	A lecturer  add notes and materials to my classroom  I can give them something to read before/after class
Priority	LOW
Iteration / Sprint	3
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
47. Lecturers can upload classroom notes and materials	

**3.5.17 As a lecturer, I want to edit my notes and materials so that I can modify the content of my notes**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	39
Title	EDIT NOTES / MATERIALS (LECTURERS)
Description As I want to So that	A lecturer  edit my notes and materials  I can modify the content of my notes
Priority	LOW
Iteration / Sprint	3
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
48. Lecturers can edit their classroom materials	

**3.5.18 As a lecturer, I want to view my notes and materials so that I can check my notes after uploading them**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	40
Title	VIEW NOTES / MATERIALS (LECTURERS)
Description As I want to So that	A lecturer  view my notes and materials  I can check my notes after uploading them
Priority	LOW
Iteration / Sprint	3
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
49. Lecturers can view their notes and materials	

### 3.5.19 As a lecturer, I want to delete my notes and materials so that I can remove the contents of my materials

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	41
Title	DELETE NOTES / MATERIALS (LECTURERS)
Description As I want to So that	A lecturer  delete my notes and materials  I can remove the contents of my materials
Priority	LOW
Iteration / Sprint	3
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
50. Lecturers can remove notes and materials for their classrooms	

**3.5.20 As a lecturer, I want to add students to my classroom so that I can let my students join my classroom**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	42
Title	ADD STUDENTS (LECTURERS)
Description As I want to So that	A lecturer add students to my classroom so that I can let my students join my classroom
Priority	MEDIUM
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
51. Lecturers can add their students to their classrooms	

**3.5.21 As a lecturer, I want to view students in my classroom so that I can view their information**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	43
Title	VIEW STUDENTS (LECTURERS)
Description As I want to So that	A lecturer view students in my classroom I can view their information
Priority	MEDIUM
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
52. Lecturers can view each student's information in their classrooms	

### 3.5.22 As a lecturer, I want to delete students in my classroom so that I can remove them from my classroom

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	44
Title	DELETE STUDENTS (LECTURERS)
Description As I want to So that	A lecturer  delete students in my classroom  I can remove their information from my classroom
Priority	MEDIUM
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
53. Lecturers can delete students from their classrooms	

### 3.5.23 As a lecturer, I want to edit students in my classroom so that I can manage their information and roles from my classroom

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	45
Title	EDIT STUDENTS (LECTURERS)
Description As I want to So that	A lecturer  edit students in my classroom  I can manage their information and roles from my classroom
Priority	MEDIUM
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
54. Lecturers can modify their student's information in their classrooms	



### 3.6 Admin Feature

#### 3.6.1 As an admin, I want to view my dashboard so that I can manage the system

System Name	UTM Online System
Team Id	G03_40
Number #	50
Title	VIEW DASHBOARD (ADMIN)
Description	
As	An admin
I want to	view my dashboard
So that	I can manage the system
Priority	HIGH
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
55. Admins can view an administration dashboard	

**3.6.2 As an admin, I want to login so that I can gain access to the management system**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	51
Title	AUTHENTICATE SELF (ADMIN)
Description As I want to So that	An admin login I can gain access to the management system
Priority	HIGH
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
56. Admins can log into their dashboard	

### 3.6.3 As an admin, I want to view users so that I can know their information and check on certain users and their activity

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	52
Title	VIEW USERS (ADMIN)
Description As I want to So that	An admin  view users  I can know their information and check on certain users and their activity
Priority	HIGH
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
57. Admins can view all user data	

**3.6.4 As an admin, I want to add new users so that I can help in their registration process**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	53
Title	ADD USER (ADMIN)
Description As I want to So that	An admin add new users I can help in their registration process
Priority	HIGH
Iteration / Sprint	1
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
58. Admins can add new user accounts	

**3.6.5 As an admin, I want to view students so that I can manage their access to their features**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	54
Title	VIEW STUDENTS (ADMIN)
Description As I want to So that	An admin  view students  I can manage their access to their features
Priority	MEDIUM
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
59. Admins can view student data	

### 3.6.6 As an admin, I want to edit student information so that I can modify their data as students

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	55
Title	EDIT STUDENTS (ADMIN)
Description As I want to So that	An admin  edit student information  I can modify their data as students
Priority	MEDIUM
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
60. Admins can modify student data	

**3.6.7 As an admin, I want to delete student roles so that I can remove their information**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	56
Title	DELETE STUDENT (ADMIN)
Description As I want to So that	An admin  delete student roles  I can remove their information
Priority	MEDIUM
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
61. Admins can remove student information	

### 3.6.8 As an admin, I want to view Lecturers so that I can manage their access to their features

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	57
Title	VIEW LECTURER (ADMIN)
Description As I want to So that	An admin  view Lecturers  I can manage their access to their features
Priority	MEDIUM
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
62. Admins can view lecturer information	



**3.6.9 As an admin, I want to delete lecturer roles so that I can remove their information**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	58
Title	DELETE LECTURER (ADMIN)
Description As I want to So that	An admin  delete lecturer roles  I can remove their information
Priority	MEDIUM
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
63. Admins can remove lecturer information	

**3.6.10 As an admin, I want to edit lecturer information so that I can modify their data as Lecturers**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	59
Title	EDIT LECTURER (ADMIN)
Description As I want to So that	An admin  edit lecturer information  I can modify their data as Lecturers
Priority	MEDIUM
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
64. Admins can modify lecturer information	

**3.6.11 As an admin, I want to view staff so that I can manage their access to their features**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	60
Title	VIEW STAFF (ADMIN)
Description As I want to So that	An admin  view staff  I can manage their access to their features
Priority	MEDIUM
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
65. Admins can view staff information	

### 3.6.12 As an admin, I want to add new staff so that I can link more than one account to a student when needed

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	61
Title	ADD STAFF (ADMIN)
Description As I want to So that	An admin  add new staff  I can link more than one account to a student when needed
Priority	MEDIUM
Iteration / Sprint	3
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
66. Admins can add new staff accounts	

**3.6.13 As an admin, I want to edit staff information so that I can modify their data as parents**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	62
Title	EDIT STAFF (ADMIN)
Description As I want to So that	An admin  edit staff's information  I can modify their data as parents
Priority	MEDIUM
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
67. Admins can modify staff information	

**3.6.14 As an admin, I want to delete staff roles so that I can remove their information**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	63
Title	DELETE STAFF (ADMIN)
Description As I want to So that	An admin  delete staff roles  I can remove their information
Priority	MEDIUM
Iteration / Sprint	2
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
68. Admins can remove staff information	

**3.6.15 As an admin, I want to view user subscription statuses so that I can help users check if they are subscribed**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	64
Title	VIEW USER SUBSCRIPTION (ADMIN)
Description As I want to So that	An admin  view user subscription statuses  I can help users check if they are subscribed
Priority	LOW
Iteration / Sprint	3
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
69. Admins can view each user subscriptions list	

**3.6.16 As an admin, I want to modify user subscription statuses so that I can help users subscribe**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	65
Title	EDIT USER SUBSCRIPTION (ADMIN)
Description As I want to So that	An admin  modify user subscription statuses  I can help users subscribe
Priority	LOW
Iteration / Sprint	3
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
70. Admins can modify user subscriptions status	



**3.6.17 As an admin, I want to cancel user subscription status so that I can unsubscribe users from the system**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	66
Title	CANCEL USER SUBSCRIPTION (ADMIN)
Description As I want to So that	An admin  cancel user subscription status  I can unsubscribe users from the system
Priority	LOW
Iteration / Sprint	3
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
71. Admins can let users unsubscribe from the system	

**3.6.18 As an admin, I want to view classroom so that I can check on classrooms for Lecturers**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	67
Title	VIEW CLASSROOM (ADMIN)
Description As I want to So that	An admin  view classroom  I can check on classrooms for Lecturers
Priority	LOW
Iteration / Sprint	3
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
72. Admins can view every classroom	

**3.6.19 As an admin, I want to update classroom information so that I can help Lecturers with their classrooms**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	68
Title	UPDATE CLASSROOM (ADMIN)
Description As I want to So that	An admin  update classroom information  I can help Lecturers with their classrooms
Priority	LOW
Iteration / Sprint	3
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
73. Admins can modify classroom information	

**3.6.20 As an admin, I want to delete a classroom so that I can remove classroom data**

<b>System Name</b>	<b>UTM Online System</b>
<b>Team Id</b>	<b>G03_40</b>
Number #	69
Title	DELETE CLASSROOM (ADMIN)
Description	
As	An admin
I want to	delete a classroom
So that	I can remove classroom data
Priority	LOW
Iteration / Sprint	3
Status (Planning / In Progress / Complete)	Completed
<b>Acceptance Criteria / Confirmation</b>	
74. Admins can remove classroom information	

## **4. External Interface Requirements**

### **4.1 Hardware Interfaces**

The UTM Online System will support all commonly used web browsers, including Google Chrome, Microsoft Edge, Firefox, Opera, Opera GX, and others, ensuring accessibility across a wide range of devices.

The platform will also be optimized for mobile devices running on both iOS and Android. For mobile versions, access to hardware features such as the device's camera will be required to enable functionalities like PDF scanning for assignment submissions or document uploads.

By ensuring compatibility with diverse hardware interfaces, the platform will provide users with flexibility and convenience, whether they are accessing the system on desktop, laptop, tablet, or mobile devices.

## **4.2 Software Interfaces**

The UTM Online System will be hosted on a cloud-based infrastructure provided by UTM Digital, running on Alma Linux 9 with a configuration of 16GB RAM, 2 CPUs, and 4 vCPUs. This setup ensures a robust environment capable of handling the platform's operational needs.

The system will utilize MySQL as the database management system to store and manage data efficiently. Caching mechanisms such as Memcached or Redis may be implemented to optimize data retrieval speeds and enhance performance.

Data exchanged between the client and server will be encoded in JSON format and transmitted via HTTPS requests to ensure security and data integrity. The front-end will communicate with the back-end using a RESTful API, developed with PHP to align with the system's existing technologies. The back-end will process incoming requests, handle database operations, and return responses to the client.

For modular development and scalability, any additional services or integrations, such as an email notification service, will communicate with the main back-end through secure RESTful API endpoints. This architecture ensures a streamlined and efficient flow of data and interactions across all system components.

## **4.3 Communications Interfaces**

The UTM Online System will be compatible with any modern web browser, ensuring accessibility and ease of use for all users. The platform will also support email services to send confirmation

emails, important notifications, and updates to students, such as assignment deadlines, grades, and announcements.

The primary communication standard for the system will be HTTP, utilizing RESTful APIs to handle client-server interactions effectively. These APIs will facilitate seamless communication between the front-end interface and back-end services, ensuring smooth operation of the platform.

To address security and encryption requirements, the system will employ the HTTPS protocol. This ensures that all data transferred between the client and server is encrypted, protecting sensitive user information and maintaining confidentiality. By combining these protocols and communication standards, the platform will provide a secure and efficient communication environment for all users.

## **5. Other Nonfunctional Requirements**

### **5.1 Performance Requirements**

Not applicable.

### **5.2 Safety Requirements**

The UTM Online System will adhere to safety guidelines that ensure the protection of personal and sensitive information for all users. While the platform is designed for individuals aged 18 and above and is not subject to regulations like the Children's Online Privacy Protection Act (COPPA), it will comply with relevant laws, such as Malaysia's Personal Data Protection Act (PDPA), and implement robust measures to safeguard user information. The key safety requirements include:

#### **i. Protection of Personal Information**

We will ensure that users' personal information is not shared with third parties without explicit consent. Data will only be used for operational purposes, and all uses will comply with applicable data protection regulations.

#### **ii. User Consent Verification**

We will ensure that all users provide explicit consent during the registration process, including agreeing to the platform's terms and conditions and privacy policy. For international students

or special cases, additional verification (such as official documents) may be required to comply with regional data protection laws.

#### iii. Reviewing and Managing Personal Information

Users will have access to their personal information through a secure dashboard, allowing them to view, update, or download their details as needed. This functionality ensures transparency and user control over their data.

#### iv. Confidentiality, Security, and Integrity of Personal Information

We will enforce standard security measures throughout the system's development and operation, as outlined in Section 5.3 of this document. This includes implementing secure password practices, encrypted data storage, and regular security audits to ensure the system's safety and reliability.

These measures will collectively ensure that the UTM Online System upholds the highest standards of safety, promoting trust and confidence among its users.

### **5.3 Security Requirements**

To ensure robust security within the system, we will implement JSON Web Token (JWT)-based authentication. This approach encodes user data into a JSON object, enabling secure user authentication and authorization. The JWT implementation will be integrated using the Spring Security extension of the Java Spring Framework, ensuring compatibility and reliability within the platform.

Additionally, standard security measures will be employed, including password hashing and salting using the BCrypt hashing algorithm. As of the time of writing, BCrypt is the industry-standard algorithm for secure password hashing, offering protection against common attacks such as brute force and rainbow table exploits. These measures will collectively safeguard user credentials and maintain the overall security of the system.

## 5.4 Software Quality Attributes

### i. Performance

Not applicable.

### ii. Correctness

Not applicable.

### iii. Reusability

Not applicable.

## 6. Other Requirements

Not applicable.S

## Appendix A: Glossary

ABBREVIATION	DEFINITION
API	Application Programming Interface
COPPA	Children's Online Privacy Protection Act
HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol Secure
JSON	JavaScript Object Notation
NLP	Natural Language Processing
REST	Representational State Transfer
LMS	Learning Management System
FPX	Financial Process Exchange
PDPA	Personal Data Protection Act
BCrypt	Blowfish-based Cryptography for Password Hashing
JWT	JSON Web Token



MOOCs	Massive Open Online Courses
PRISCILLA	Personalized Recommendation and Insights System for Collaborative Interactive Learning Assistance

## **Appendix B: Analysis Models**

Not applicable.

## **Appendix C: Issues List**

Not applicable.