

COMSATS UNIVERSITY ISLAMABAD, ABBOTTABAD CAMPUS

SOFTWARE QUALITY ENGINEERING

**Development plan**

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Learning Management System

# Scope:

The Learning Management System (LMS) Quality Improvement Project aims to enhance the quality and effectiveness of the organization's educational platform. The scope includes improving user experience, content relevance, scalability, data security, and overall system performance. Key aspects of the project involve updating course content, enhancing user interfaces, ensuring data privacy, and implementing features for personalized learning experiences.

# Project Feasibility:

The feasibility of the Learning Management System (LMS) needs to be assessed comprehensively across various factors, including technical, operational, financial, schedule, market, legal, ethical, and resource aspects. Engaging with key stakeholders is essential for understanding the project's feasibility and potential challenges.

# Risk Analysis and Mitigation:

Risk analysis for the LMS project involves identifying potential issues such as technical limitations, resource constraints, changing requirements, and data security breaches. Mitigation strategies include thorough feasibility studies, effective resource planning, robust change management, encryption for data security, and involving end-users in development. Adhering to standardized APIs, selecting reliable vendors, and staying adaptable through agile methodologies are key to mitigating risks and ensuring project success.

# Feasibility Study Outcome:

A positive outcome from the feasibility study, indicating alignment with these factors and positive results in these areas, would suggest that the LMS project is feasible and can move forward with planning and execution.

# Quality Attributes for LMS:

* Reliability: Ensuring consistent access and performance for users.
* Usability: Creating an intuitive and user-friendly interface for learners and educators.
* Scalability: Designing the system to handle growth in users and content.
* Data Security: implementing robust security measures to protect students and instructors data.
* Content Relevance: Ensuring that the learning materials remain current and relevant.

# Process Model for LMS:

The ***Agile development model*** is suitable for the LMS project. Agile's iterative and incremental approach allows for flexibility, continuous feedback, and the ability to adapt to changing requirements, which is crucial in educational technology projects.

# Requirements Covered

The project will cover requirements such as:

* Every user of the system has to login in order to access the system.
* Students and Instructors will have separate personal profiles, students can see the progress they have recently in form of dashboards. System users have access to change passwords and update their profiles.
* Students can view the course outlines and take important info about available courses. Students can apply for registration for different courses. After the selection, of the course, learning starts.
* Students can attempt quizzes and assignments from their registered courses; quizzes and assignments are weekly basis and after every quiz mark initiated itself.
* On completion of a course students will be given certificates; not only those weekly biweekly contests occur that also give certificates but for every contest, the student must register accordingly.
* Students can apply for different available scholarships; before applying must check their eligibility criteria.
* To connect with the tutor there is the option of a discussion box where students have a QnA session.
* Also have the option to give suggestions to improve the system or any complaints that are managed by the admin of the system.

# Testing Approach

The testing approach includes various types of testing:

* User Acceptance Testing (UAT): Involves real users testing the system for usability and functionality.
* Functional Testing: Verifies that the system functions according to specifications.
* Security Testing: Identifies vulnerabilities and ensures data protection.
* Performance Testing: Evaluates system responsiveness.
* Compatibility Testing: Ensures the LMS works seamlessly across different devices and browsers.

# Software Development Standards and Procedures

Software Development Standards and Procedures for the Learning Management System (LMS) project are critical to ensuring consistency, reliability, and efficiency throughout the development lifecycle. Here are key standards and procedures to be followed:

* Coding Requirements: ensuring consistency in code structure and documentation.
* Version Management: Use version control systems like Git.
* Procedure for Code Review: Establish a peer review process to maintain code quality.
* Documentation Standards: Specify standards for code comments, user guides & manuals.
* Agile Development Practices: Follow agile practices such as sprint planning, daily stand-up meetings, and regular retrospectives.
* Software Release Management: Plan and document each release, specifying included features and enhancements.
* Change Management: Implement systematic procedures for handling code modifications and updates.
* User Feedback and Collaboration: Encourage stakeholder participation, gather and respond to user recommendations.
* Continuous Improvement: incorporate improvements based on feedback and retrospectives.

# Project Initiation:

- Definition of project goals, objectives, and key stakeholders.

- Creation of project charter.

- Identification of project managers and team members.

# Requirement Analysis and Backlog Development:

- Gathering and documenting user requirements.

- Development of user stories and features prioritization.

- Creation of a detailed product backlog for development.

# Sprint Preparation:

- Selection of backlog items for the upcoming sprint.

- Sprint goal and duration establishment.

- Assignment of tasks to team members.

# Coding and Development:

- Implementation of LMS features and functionalities.

- Adherence to coding conventions and standards.

- Collaboration among developers for code integration.

# Testing and Continuous Integration:

- Continuous integration of code changes.

- User Acceptance Testing (UAT) for functionality validation.

- Performance testing, security testing, and compatibility testing.

# Documentation and Reporting:

- Creation and updating of technical documentation.

- Regular progress reporting through sprint reviews.

- Maintenance of user guides and system manuals.

# Release Administration:

- Planning and managing software releases.

- Documentation of included features and enhancements.

- Conducting final testing before release.

# Architectural or Structural Design of LMS:

- User interface (UI) design for learner and educator interaction.

- Database design for data storage and retrieval.

# Project Milestones:

- Milestone 1: LMS Project Initiation Phase Completion.

- Milestone 2: Requirement Analysis and Backlog Finalization.

- Milestone 3: Successful Completion of Sprint 1.

- Milestone 4: Completion of Sprint 2 and Feature Integration.

- Milestone 5: User Acceptance Testing (UAT) Completion.

- Milestone 6: First LMS Release and User Deployment.

- Milestone 7: Release of Enhanced LMS Version.

- Milestone 8: LMS Closure and Documentation Completion.

# Project Staff Organization for LMS:

- Project Manager: Oversees LMS project management and leadership.

- Product Owner: Represents user needs and requirements.

- Development Team: Implements LMS features and functionalities.

- Quality Assurance Team: Ensures software quality through testing.

- Technical Writers: Document LMS features and user guides.

- User Support Team: Provides helpdesk support and assistance.

# Control Methods:

- User authentication and access control mechanisms.

- Continuous monitoring of user interactions and system activities.

- Regular auditing of system security and data integrity.

# Project Cost Estimation:

- Development costs (personnel, software, and hardware).

- Quality assurance, testing, and documentation expenses.

- Infrastructure, licensing, and subscription costs.

- Contingency budget for unforeseen expenses.