

# Software Requirements Specification (SRS)

## Self-Paced Learning Management System (LMS)

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### 1. Introduction

#### 1.1 Purpose

This document defines the functional and non-functional requirements for a **Self-Paced Learning Management System (LMS)** designed to support independent learners. The system enables learners to study at their own pace using interactive content such as videos, 3D models, quizzes, question banks, and flashcards.

This SRS is intended for: - Product owners - Software developers - UI/UX designers - QA engineers - Project managers

#### 1.2 Scope

The LMS is a **non-SaaS**, single-organization platform focused on asynchronous learning. It does not include live classes or instructor-led sessions. The system emphasizes: - Self-paced learning - Interactive 3D training - Knowledge reinforcement (question banks & flashcards) - Progress tracking and certification

#### 1.3 Definitions & Acronyms

- LMS: Learning Management System
  - RBAC: Role-Based Access Control
  - SRS: Software Requirements Specification
  - UI/UX: User Interface / User Experience
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### 2. Overall Description

#### 2.1 Product Perspective

The LMS is a web-based application accessible via modern browsers and optimized for desktop, tablet, and mobile devices. It may integrate with external services such as email gateways and cloud storage but operates as a standalone system.

#### 2.2 User Classes

User	Description
Super Admin	Full system administration
Content Admin	Manages courses, content, and assessments

User	Description
Student	Self-paced learner
Reviewer (Optional)	Reviews and validates learning content

## 2.3 Operating Environment

- Web browsers: Chrome, Firefox, Edge, Safari
- Devices: Desktop, Tablet, Mobile
- Server environment: Linux-based cloud or on-prem deployment

## 2.4 Design Constraints

- Self-paced only (no live sessions)
  - Must support rich media and 3D rendering
  - Must be scalable and modular
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# 3. Functional Requirements

## 3.1 User Authentication & Authorization

- Users shall register using email and password
  - The system shall support email verification and password reset
  - The system shall enforce RBAC for all features
  - The system shall manage active sessions and auto logout on inactivity
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## 3.2 Student Dashboard

- The system shall display enrolled courses
  - The system shall show course completion percentage
  - The system shall display last accessed lesson
  - The system shall show achievements and certificates
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## 3.3 Course Management

- Admins shall create, update, publish, and archive courses
  - Courses shall contain modules and lessons
  - The system shall support prerequisites between courses
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## 3.4 Lesson & Content Delivery

- Lessons shall support video, text, PDF, audio, and images
- Lessons shall embed interactive 3D models
- The system shall save progress automatically
- Learners shall resume from last activity

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### **3.5 3D Training Module**

- The system shall render 3D models in-browser
  - Users shall rotate, zoom, and interact with models
  - The system shall support guided 3D walkthroughs
  - Completion of 3D simulations shall be tracked
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### **3.6 Question Bank**

- Admins shall create and manage a centralized question bank
  - Questions shall support multiple formats (MCQ, True/False, Short Answer, Scenario-based)
  - Questions shall be tagged by topic and difficulty
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### **3.7 Assessments & Quizzes**

- The system shall generate quizzes from the question bank
  - Quizzes shall support time limits and attempt limits
  - The system shall auto-grade objective questions
  - Learners shall receive feedback based on configuration
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### **3.8 Practice Mode**

- Learners shall attempt unlimited practice questions
  - Questions shall be randomized
  - The system shall analyze performance and identify weak areas
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### **3.9 Flashcards & Spaced Repetition**

- The system shall provide flashcards per course/module
  - Flashcards shall support text, images, and audio
  - The system shall implement spaced repetition algorithms
  - Learners shall track flashcard mastery levels
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### **3.10 Progress Tracking & Analytics**

- The system shall track lesson completion and time spent
  - The system shall record quiz scores and attempts
  - The system shall generate progress reports
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### **3.11 Certification**

- The system shall issue certificates upon course completion
- Certificates shall include verification IDs

- Learners shall download certificates as PDF
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### **3.12 Notifications**

- The system shall send in-app notifications
  - The system shall send email notifications (optional)
  - Notifications shall include reminders and milestones
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### **3.13 Search & Discovery**

- The system shall provide global search
  - Users shall filter by category, difficulty, and duration
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### **3.14 Administration**

- Admins shall manage users and roles
  - The system shall log administrative actions
  - The system shall support backup and restore
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## **4. Non-Functional Requirements**

### **4.1 Performance**

- Page load time shall be under 3 seconds
- 3D models shall be optimized for smooth interaction

### **4.2 Security**

- All sensitive data shall be encrypted
- Secure authentication and authorization shall be enforced

### **4.3 Scalability**

- The system shall support thousands of concurrent users
- Modular architecture shall allow feature expansion

### **4.4 Usability**

- The UI shall be intuitive and accessible
- The system shall be responsive on all screen sizes

### **4.5 Reliability**

- System uptime target: 99.5%
  - Automatic backups shall be scheduled
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## 5. Future Enhancements

- AI-based learning recommendations
  - Adaptive assessments
  - VR-based training modules
  - Offline-first mobile application
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## 6. Approval

This document serves as the baseline requirements for the development of the Self-Paced LMS and is subject to stakeholder review and approval.