Common LMS Features and Dashboard Overview

Core Entities in LMS Systems

1. User Management

- **Users**: Students, Instructors, Administrators, Parents
- **Roles & Permissions**: Role-based access control
- **User Profiles**: Personal information, preferences, avatars
- **Authentication**: Login credentials, SSO integration

2. Course Management

- **Courses**: Course information, syllabus, duration
- **Course Categories**: Subject areas, departments
- **Course Enrollment**: Student-course relationships
- **Course Sections**: Multiple sections of same course
- **Prerequisites**: Course dependencies

3. Content Management

- **Lessons/Modules**: Structured learning content
- **Learning Materials**: Documents, videos, presentations
- **Resources**: Downloadable files, links
- **Multimedia Content**: Videos, audio files, interactive content
- **SCORM Packages**: Standardized e-learning content

4. Assessment System

- **Assignments**: Tasks with deadlines and submissions
- **Quizzes/Tests**: Multiple question types (MCQ, essay, etc.)
- **Question Banks**: Reusable question repository
- **Gradebook**: Grade tracking and calculation
- **Rubrics**: Assessment criteria and scoring guides

5. Communication Features

- **Discussion Forums**: Course-specific discussions
- **Messaging System**: Private messages between users
- **Announcements**: Course and system-wide notifications

- **Chat/Video Conferencing**: Real-time communication

- **Comments**: Feedback on assignments and content

6. Progress Tracking

- **Course Progress**: Completion tracking

- **Learning Analytics**: Performance metrics

- **Attendance**: Class participation tracking

- **Certificates**: Completion certificates

- **Badges**: Achievement recognition

Dashboard Components

Student Dashboard

- **My Courses**: Enrolled courses overview

- **Recent Activity**: Latest updates and notifications

- **Upcoming Deadlines**: Assignments and quiz due dates

- **Grades Overview**: Current performance summary

- **Progress Tracking**: Course completion status

- **Calendar Integration**: Schedule view

- **Quick Access**: Bookmarked content and frequently used features

Instructor Dashboard

- **Course Management**: Course creation and editing tools

- **Student Progress**: Class performance overview

- **Gradebook**: Grade entry and management

- **Content Management**: Upload and organize materials

- **Communication Tools**: Messaging and announcement features

- **Analytics**: Course and student performance metrics

- **Assignment Review**: Pending submissions and grading queue

Administrator Dashboard

- **System Overview**: Platform usage statistics

- **User Management**: User accounts and roles

- **Course Management**: Institution-wide course oversight

- **Reports & Analytics**: Comprehensive system reports

- **System Settings**: Platform configuration

- **Content Library**: Shared resources management
- **Backup & Maintenance**: System health monitoring

Common Database Entities

Core Tables

1. **users** - User account information
2. **roles** - User role definitions
3. **courses** - Course master data
4. **enrollments** - Student-course relationships
5. **lessons** - Learning content structure
6. **assignments** - Assignment definitions
7. **submissions** - Student assignment submissions
8. **grades** - Grade records
9. **quizzes** - Quiz/test definitions
10. **quiz_attempts** - Student quiz attempts
11. **discussions** - Forum topics and posts
12. **announcements** - System and course announcements
13. **files** - Media and document storage
14. **progress** - Learning progress tracking

Relationship Types

- **One-to-Many**: User → Enrollments, Course → Lessons
- **Many-to-Many**: Students ↔ Courses (via enrollments)
- **One-to-One**: User → Profile, Assignment → Rubric
- **Hierarchical**: Course → Module → Lesson → Activity

Key Features by User Type

Students

- Course enrollment and access
- Content consumption (videos, documents, etc.)
- Assignment submission
- Quiz taking
- Grade viewing

- Discussion participation

- Progress tracking

- Certificate generation

Instructors

- Course creation and management

- Content upload and organization

- Assignment and quiz creation

- Grade management

- Student progress monitoring

- Communication with students

- Report generation

Administrators

- User account management

- System-wide reporting

- Course oversight

- Platform configuration

- Data backup and security

- Integration management

- Performance monitoring

Technical Considerations

Data Relationships

- Complex many-to-many relationships between users and courses

- Hierarchical content structure (courses → modules → lessons)

- Time-based data (enrollments, submissions, attempts)

- File storage and media management

- Audit trails for grading and submissions

Common Integrations

- Single Sign-On (SSO) systems

- Video conferencing platforms

- Payment gateways (for paid courses)

- Email systems

- External content providers

- Student Information Systems (SIS)

- Analytics platforms