Classync - Virtual Classroom Platform

Requirements

Group - 33

Course: Software Engineering

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1 Introduction

This report contains the complete set of functional and non-functional requirements for the Virtual Classroom Platform. Requirements were extracted and rephrased from the project requirement sheet and documented here in a structured form.

2 Requirements Summary

The following sections provide a structured list of all system requirements categorized into authentication, homepage, classroom, assignments, notifications, analytics, groups, AI tools, quizzes, and whiteboard functionalities.

3 Functional Requirements

3.1 Authentication & User Management

1. The system shall allow new users to register using email and password.

2. The system shall allow users to securely log in and log out.

3. The system shall provide password reset through email.

4. Users shall be able to update their username.

5. The system shall verify instructor roles during registration.

6. Logout shall clear user data and return to homepage.

3.2 Homepage Requirements

1. The homepage shall display a personalized dashboard showing courses, events, and quick actions.

2. The homepage shall load quickly and meet accessibility standards. (NFR)

3. Homepage shall show navigation buttons with role-based visibility.

4. Enrolled or created courses shall appear as interactive cards with metadata.

3.3 Course & Classroom Management

1. Instructors shall create, edit, and delete courses.

2. Students shall be able to unenroll with validation.

3. Classroom stream posts shall appear immediately at the top.

4. A copy-class-code button shall be available.

5. The header shall show professor's full name.

6. People tab shall show enrolled students and instructors with roles.

7. Assignments list shall be visible to enrolled users.

8. A simple class chat shall be available per course.

9. Chat messages shall show sender name and maintain order.

10. Chat window shall auto-scroll to latest messages.

11. New users shall see complete chat history.

3.4   Assignment Management

1. Instructors shall create, edit, and delete assignments with deadlines and attachments.

2. Students shall submit assignments and resubmit before deadline.

3. Instructors shall view all submissions with names and download links.

4. System shall send reminders for assignments due within 24 hours.

5. Teachers shall grade submissions and control grade visibility.

6. System shall generate reports like grade distributions (CSV/PDF).

7. Students shall see assignments filtered by status (Pending, Submitted, Overdue).

8. Late submissions shall be disabled after deadline.

9. Students shall receive real-time grade/feedback notifications.

3.5   Announcements & Posts

1. Instructors shall create posts, announcements, materials, polls.

2. Instructors shall edit their announcements.

3. Instructors/admins shall delete announcements.

4. System shall support resource uploads with type/size checks.

5. Instructors may mark posts as Important or Urgent.

3.6   Whiteboard & PDF Annotation

1. Instructors shall open PDFs in whiteboard editor.

2. System shall load PDF.js and Fabric.js.

3. Tools: pen, highlighter, eraser.

4. Typed notes panel shall be available.

5. Undo and Clear options shall be supported.

6. Zoom and fit-to-screen functionality included.

7. Page navigation with indicators.

8. Fullscreen mode support.

9. Users may copy, clear, download notes and export annotations as PDF.

3.7   Analytics

1. Instructors shall view overall analytics of courses and students.

2. Bar charts shall visualize course completion rates.

3. Submission-health breakdown shall be shown (on-time, late, missing).

4. Assignment leaderboard shall be provided.

5. Users may refresh analytics manually.

6. Students shall see personal progress per course.

7. Students shall view distribution of submission statuses.

8. System shall enforce role-based access for analytics.

9. Analytics shall reflect accurate backend-calculated data.

3.8   Groups

1. Instructors shall create uniquely named groups within a course.

3.9   Notifications

1. Unread notification count badge shall match backend state.

2. Users shall mark all notifications as read.

3. System shall deliver in-app and optional email notifications.

4. Students shall receive notifications on grading.

5. Instructors shall receive notifications on submissions.

3.10   Quiz Generator

1. Students shall generate topic-based quizzes.

2. Users shall select quiz type (MCQ/True-False).

3. Users shall select grade level.

4. Users shall choose number of questions.

5. Quiz history shall be viewable and clearable.

3.11   AI Tutor

1. Users may ask topic-based questions and receive structured answers.

2. AI input shall support long questions.

3. Users shall view and clear AI chat history.

4   Non-Functional Requirements

1. Homepage and system shall meet accessibility standards.

2. Analytics must reflect accurate and fresh backend-calculated data.