StudyBuddy
Feasibility Report

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Course: Software Engineering

November, 2025

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1 Introduction

The purpose of this report is to evaluate the feasibility of developing StudyBuddy, a university-oriented Learning Management System (LMS). Unlike the previous productivity-focused version, the updated system supports course management, instructional modules, assignments, submissions, grading, real-time communication, dashboard notifications, and role-based control for students, teachers, and administrators.

2 Objectives

- Provide a centralized digital platform for course delivery and academic communication.
- Allow administrators to configure courses, teachers, and class assignments.
- Enable teachers to manage modules, assignments, and grading.
- Facilitate students' access to learning materials, submissions, grades, discussions, and personal tasks.
- Support real-time course discussions using WebSocket technology.

3 Tools & Technologies Required

- **Frontend:** React.js, Vite, JavaScript
- **Backend:** Spring Boot, JPA/Hibernate
- **Database:** PostgreSQL
- **Real-time Communication:** STOMP over WebSocket
- **Authentication:** JWT-based authentication
- **Version Control:** GitHub
- **Hosting:** Any Spring-compatible backend server and a static hosting service for the frontend

4 Technical Feasibility

The selected technologies are robust and industry-standard for building large-scale web applications.

Technical Strengths

- Spring Boot and PostgreSQL ensure reliability, scalability, and structured data management.
- React combined with Vite ensures fast rendering and modular component reuse.
- WebSocket STOMP provides stable real-time collaboration.
- JWT authentication supports secure, stateless communication.

Skills Assessment

The development team requires proficiency in:

- Java Spring Boot and RESTful API design
- PostgreSQL schema modeling
- React.js and modern frontend development
- WebSocket communication patterns

Technical Challenges

- Ensuring consistent role-based access across all system endpoints.
- Synchronizing real-time discussion messages for multiple concurrent clients.
- Maintaining event-driven dashboards with minimal latency.
- Designing a reliable system for assignment submissions and grading.

5 Economic Feasibility

All selected tools are open-source. Hosting costs remain minimal due to free-tier services for both backend and frontend deployment. The main investment is the development workload.

6 Operational Feasibility

The system will feature a clean user interface with role-based navigation. Students, teachers, and administrators will access distinct dashboards tailored to their responsibilities. The platform relies on widely supported browsers and stable backend services.

7 Schedule Feasibility

The development will follow these phases:

1. Requirements gathering and feasibility analysis
2. UI/UX prototyping
3. Backend architecture and database design
4. Frontend implementation and integration
5. Testing, validation, and documentation

8 Conclusion

The feasibility analysis confirms that the updated version of StudyBuddy—now an LMS—can be implemented using modern, reliable, and scalable technologies. The system provides academic value by integrating course management, assignments, real-time discussions, and student productivity tools into one platform.