**Design**

**1. Introduction**

The design phase of Insight Hub focuses on structuring the system architecture, database schema, and user interface (UI) components. This ensures that the platform is efficient, scalable, and user-friendly.

**2. System Architecture**

**2.1 High-Level Architecture**

Insight Hub follows a **three-tier architecture**:

* **Frontend (Presentation Layer)**: React.js with TypeScript (Vite).
* **Backend (Business Logic Layer)**: Spring Boot REST API.
* **Database (Data Layer)**: MySQL with JPA/Hibernate.

**2.2 Component Diagram**

A component diagram will be created to visualize system interactions (To be added).

**3. Database Design**

**3.1 Database Schema**

The database consists of multiple tables:

* **Users** (UserID, Name, Email, Password, Role)
* **Subjects** (SubjectID, Title, Tutor, Department, Semester)
* **Resources** (ResourceID, Title, Type, URL, SubjectID, UploadedBy)
* **Units** (UnitID, Name, SubjectID)

**3.2 Entity-Relationship (ER) Diagram**

An ER diagram will be created to represent database relationships (To be added).

**4. User Interface (UI) Design**

**4.1 Wireframes & UI Mockups**

* **Faculty Dashboard**: Manage subjects, upload resources, and track usage.
* **Student Portal**: View and download learning materials.
* **Admin Panel**: Manage users and system settings.

**4.2 Navigation Flow**

* **Login Page → Dashboard → Select Subject → View/Upload Resources**

**5. API Design**

* **User Authentication**: /api/auth/login
* **Manage Subjects**: /api/subjects
* **Upload Resources**: /api/resources/upload
* **Download Resources**: /api/resources/download/{id}