# STUDENT PROJECT SCHEME 2024-2025

## DRUG INVENTORY AND SUPPLY CHAIN TRACKING SYSTEM

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## 1. INTRODUCTION

This project proposal focuses on developing an innovative Drug Inventory and Supply Chain Tracking System aimed at optimizing the pharmaceutical supply chain. The project addresses the critical aspects of supply chain management—ensuring the Right Quantity, Right Product, Right Place, Right Time, Right Condition, Right Cost, and Right People. By integrating machine learning, IoT, and modern cloud technologies, the system seeks to improve the efficiency and effectiveness of drug distribution, ensuring continuous availability of drugs in healthcare institutions.

## 2. OBJECTIVES

Primary Objective:

To develop an efficient and reliable Drug Inventory and Supply Chain Tracking System that ensures optimal drug distribution while adhering to the principles of the 7 Rights of supply chain management.

Secondary Objectives:

• Enable real-time tracking of drug shipments using IoT and RFID.

• Provide predictive analytics to manage drug inventory effectively.

• Implement a user-friendly dashboard for stakeholders to monitor activities.

• Ensure drug quality control at every stage of the supply chain.

• Optimize costs associated with drug procurement and distribution.

## 3. METHODOLOGY

Development Platform:

The web application will be developed using React.js for the frontend and Django for the backend, with MongoDB for data storage. A mobile app will be built using Flutter.

Key Features:

1. Centralized Database: A cloud-based system to store and manage all drug-related data, such as inventory levels and expiration dates.

2. Real-time Tracking: IoT and RFID technology for tracking drug shipments from manufacturers to healthcare institutions.

3. Predictive Analytics: Machine learning algorithms for analyzing historical data and predicting future drug demand.

4. Dashboard: A real-time dashboard for monitoring inventory, shipments, and drug consumption.

5. Cost Optimization Engine: Algorithms for optimizing costs by analyzing bulk purchasing and supply chain conditions.

## 4. WORK PLAN

Task | Duration | Description

Research Phase | Week 1-2 | Understand existing workflows in institutions and vendor departments.

Design & Architecture | Week 3-5 | Develop the system architecture and design the UI/UX framework.

Development | Week 6-10 | Code the app functionalities and integrate machine learning and IoT.

Testing & Refinement | Week 11-13 | Conduct system testing, resolve bugs, and perform optimizations.

Final Report Submission | Week 14-16 | Document the project and submit the final report.

## 5. BUDGET

Item | Cost (in INR) | Justification

Development Tools | 4,000 | Required for app development and testing.

Logo Design | 1,000 | Design a unique logo for the application.

Internet and Resources | 2,500 | For online resources and internet usage.

Miscellaneous Expenses | 3,000 | Documentation, printing, and other project-related expenses.

Total | 10,500 | Estimated total project cost.

## 6. OTHER DETAILS

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Team Size: Single-person project.

Expected Outcomes:

• A fully functional Drug Inventory and Supply Chain Tracking System.

• A research paper on the application of machine learning and IoT in drug supply chains.

• Enhanced data security and improved drug availability for healthcare providers.