**MVP PLAN — AI-Driven Study Schedule Generator**

**1. Objective**

To develop an AI-powered system that **automatically creates personalized study timetables** for students based on their:

* Subjects & topics
* Exam deadlines or goals
* Available study hours
* Current proficiency
* Learning preferences

The goal is to **maximize learning efficiency and reduce planning effort** using AI recommendations.

**2. Core Features (MVP Scope)**

| **Module** | **Description** | **AI/Logic Used** |
| --- | --- | --- |
| **User Input Form** | Simple interface to collect user data (subjects, difficulty, time available, exam date). | Frontend logic (Kotlin/Flutter/Web) |
| **Smart Time Allocation Engine** | Calculates topic-wise study time using weighted priority (difficulty × importance × (1 − mastery)). | Rule-based algorithm + Linear Normalization |
| **AI Schedule Generator** | Creates day-by-day personalized plan (e.g., what to study when) | Scheduling algorithm + heuristic optimization |
| **Adaptive Replanning** | Updates schedule based on user feedback (e.g., “I missed this session” or “Topic mastered”). | Simple ML model or reinforcement rule |
| **Dashboard UI** | Displays calendar-like view with daily tasks, color-coded subjects. | Web/mobile UI |
| **Progress Tracker (Basic)** | Tracks completed study sessions and shows completion %. | Local DB or Firebase |

**3. AI / Algorithm Pipeline**

**(a) Input Data Processing**

* Parse subjects, topics, difficulty, mastery %
* Normalize total available time and distribute across days.

**(b) Priority Scoring**

Priority=(1−Mastery)×Difficulty×ImportancePriority = (1 - Mastery) \times Difficulty \times ImportancePriority=(1−Mastery)×Difficulty×Importance

**(c) Time Distribution Algorithm**

Allocate total available hours proportionally to priority weights.

**(d) Schedule Optimization**

Greedy/Heuristic approach:

1. Place high-priority topics in early days or peak focus hours.
2. Ensure daily study hours ≤ available time.
3. Include spaced-repetition review after 1, 3, and 7 days.

**(e) Output**

* Day-wise JSON or CSV schedule:

[

{"date":"2025-10-16","subject":"Math","topic":"Algebra","duration":"2h"},

{"date":"2025-10-16","subject":"Physics","topic":"Mechanics","duration":"1h"}

]

**4. Tech Stack (MVP Version)**

| **Layer** | **Technology** |
| --- | --- |
| **Frontend (App/Web)** | Kotlin (Android) or React (Web) |
| **Backend** | Python (FastAPI / Flask) |
| **AI Logic** | TensorFlow / Scikit-learn (optional ML model for adaptive rescheduling) |
| **Database** | Firebase / SQLite |
| **Data Format** | JSON/CSV for schedule export |
| **Deployment** | Firebase Hosting / Render / Local test server |

**5. Example User Flow**

1. **Input Stage**  
   User enters:
   * Subjects: Math, Physics, Chemistry
   * Exam: 2025-12-10
   * Availability: 3 hrs/day
   * Mastery: Math 30%, Physics 50%, Chemistry 60%
2. **AI Process**
   * Calculates total study days & priority weights
   * Allocates study time (Math > Physics > Chemistry)
   * Generates timetable with daily topics & breaks
3. **Output**
   * Interactive schedule with “Mark Complete” & “Reschedule” buttons
   * Downloadable .csv or calendar sync

**6. MVP Deliverables (1–2 Weeks Sprint)**

| **Day** | **Deliverable** |
| --- | --- |
| 1–2 | Requirements & Input UI form |
| 3–4 | Core scheduling logic (Python) |
| 5–6 | Integration with frontend (display plan) |
| 7 | Export to CSV + testing |
| 8–10 | Basic adaptive feedback (if missed session) |
| 11–14 | Demo & user testing with students |

**7. Future Enhancements (Post-MVP)**

* NLP-based input (e.g., “Make me a 2-month JEE study plan”)
* AI Chatbot assistant for plan adjustments
* Integration with Google Calendar / Notion
* Deep learning model for predicting optimal study patterns
* Gamification & streak tracking
* Voice input + reminder notifications

**8. Success Metrics**

| **Metric** | **Target** |
| --- | --- |
| Schedule generation accuracy | ≥ 90% valid time allocation |
| User satisfaction | ≥ 80% positive feedback |
| Daily engagement | ≥ 60% task completion |
| Time to generate schedule | < 10 seconds |

**9. Example MVP Output (Sample)**

Study Plan Summary (2025-10-16 → 2025-12-10)

--------------------------------------------

Math: 45 hours | Physics: 30 hours | Chemistry: 25 hours

Daily: 3 hours (2 sessions + 1 review)

Week 1 Focus: Algebra (Math), Mechanics (Physics)