**🛠️ MVP – Minimum Viable Product**

To build and ship fast while proving your core value, your MVP should include the following features:

**1. Admin Input Panel (Web Interface)**

* Add/manage:
  + Classes (e.g., Grade 7A, Grade 8B, JSS 1A, SSS2C)
  + Subjects (e.g., Math, English, Biology)
  + Teachers (name, subjects taught, availability schedule, preferred working days)
  + Time periods (e.g., 8am–9am, 9am–10am)
  + Weekly constraints (e.g., maximum lessons per day, off periods, lunch break)

**2. Automated Timetable Generator Engine**

* Basic rule engine to:
  + Assign subjects per class.
  + Allocate teachers to time slots avoiding clashes.
  + Ensure each subject's required number of weekly lessons is met.
  + Avoid double-booking rooms or teachers.

**3. Schedule Output Display**

* Weekly timetable view per:
  + Class
  + Teacher
* Simple drag-and-drop manual adjustment feature.

**4. Export Options**

* Export timetable as:
  + Printable PDF
  + Editable Excel format

**5. Change Trigger**

* Ability to re-generate entire timetable when:
  + A teacher becomes unavailable
  + A new subject is added
  + School hours change

**🔧 Tech Stack Suggestions**

* **Frontend**: React or Vue.js
* **Backend**: Node.js / Django / Flask
* **Scheduler Engine**: Python (for constraint solving — optionally use OptaPlanner, Google OR-Tools)
* **Database**: PostgreSQL or Firebase
* **Export**: jsPDF or Python's reportlab for PDF; xlsxwriter for Excel
* **Hosting**: Vercel (frontend), Render or Heroku (backend)