**Project Plan: JEE Dropout Prediction & Support Tool (FULL STRATEGY)**

### 📅 Timeline: July 9 – September 15, 2025

**Goal:** Build and deploy a smart, emotionally aware, ML-powered web app that predicts JEE dropout risk and delivers personalized advice to students — demo-ready for your school and impactful for your portfolio.

## 🧱 PHASE 1: ML Model Development (July 9–20)

### ✅ Objectives:

* Clean and preprocess dataset
* Engineer meaningful features (not just raw inputs)
* Train and evaluate 3–4 core ML models

### 🧠 Feature Engineering Plan:

* Convert binary mental\_health\_issues to a custom `` (0–10)
  + Ask 3–4 simple yes/no questions to calculate it
* Add ,, and `` the same way
* Normalize/scale numeric features (study hours, scores)

### 🔨 Models to Train:

1. **Logistic Regression** – interpretable and a strong baseline
2. **Decision Tree Classifier** – visual logic, easy to explain
3. **Random Forest Classifier** – more robust ensemble version
4. **XGBoost Classifier** – high-performance gradient boosting
5. **Optional:** Support Vector Machine (SVM) – linear baseline for comparison

Each model will be evaluated and compared based on performance and interpretability.

* Accuracy, Precision, Recall, F1, ROC-AUC
* Use classification\_report and confusion\_matrix
* Save final model + encoders using joblib

## 🏢 PHASE 2: Backend API with ChatGPT (July 21–30)

### ✅ Goals:

* Create a backend that:
  + Loads the saved model
  + Accepts JSON student data
  + Returns: dropout probability + GPT-powered advice

### 🔧 Tech Stack:

* Framework: Flask or FastAPI
* ML Serving: joblib model, consistent input processing
* GPT API: openai.ChatCompletion.create() with prompts like:

"A student has a dropout probability of 0.82. Their top issues are: low study hours, high peer pressure, and high parental pressure. Write advice in the tone of a funny, emotionally-aware senior who gets it."

### 🔐 API Routes:

* /predict → returns dropout score + human-style advice
* Optional: /health for uptime monitoring

## 🎨 PHASE 3: Frontend UI (July 31 – Aug 11)

### ✅ Goals:

* Build a clean, mobile-friendly frontend form
* Send data to backend → receive prediction + advice

### 💻 Frontend Stack:

* Vercel (deployment)
* Tailwind CSS (responsive design)
* Optional: React or plain HTML+JS

### 🎯 Key Features:

* Inputs: study hours, JEE scores, pressure levels, etc.
* Shows risk score (e.g. 76%) + GPT advice
* Visual risk indicator (color bar, emoji, etc.)

## 🚀 PHASE 4: Deployment + School Demo Prep (Aug 12–25)

### ✅ Deployment Plan:

* **Frontend:** Vercel (100% free)
* **Backend:** Render or Railway (free with sleep timeout)
* Use **UptimeRobot** (free) to ping /health every 5 mins and keep backend awake

### ✅ Demo Strategy:

* Create short domain or Vercel subdomain
* Generate QR code + poster (optional)
* Drop link in school WhatsApp groups
  + Include: short caption, disclaimer, value prop

### 💬 WhatsApp Share Example:

🎯 Feeling stuck in JEE prep?  
This free tool (built by a former student) predicts your dropout risk and gives GPT-powered advice based on your inputs.  
Try it now: https://jeehelp.vercel.app  
No data saved. No signups. Just clarity.

## 💡 STRETCH GOALS (Optional but Impressive)

* SHAP plots for feature impact
* Multilingual GPT output (Hindi, Malayalam, etc.)
* Save anonymized data for feedback
* Blog post explaining problem, solution, and ML pipeline

## 🔐 ETHICAL NOTE

* Inform users: AI advice is **not medical advice**
* Display disclaimer: “This is a free educational tool. For serious mental health concerns, consult a professional.”

## ✅ FREE TOOLS YOU CAN USE

| Tool | Use | Free Tier? |
| --- | --- | --- |
| **Vercel** | Frontend hosting | ✅ Fully free |
| **Render** | Backend hosting | ✅ Free (sleeps after 15 min idle) |
| **Railway** | Backend alt | ✅ Similar to Render |
| **UptimeRobot** | Keeps backend awake | ✅ 50 monitors free |
| **OpenAI API** | GPT advice | ⚠️ Very cheap (~$0.0015 per request) |
| **Google Colab** | Model training | ✅ Free for dev/testing |

## 📦 FILE STRUCTURE SUGGESTION

project/  
├── backend/  
│ ├── app.py (Flask app)  
│ ├── model.pkl  
│ └── requirements.txt  
├── frontend/  
│ └── index.html (or React)  
├── .env (OpenAI key)  
└── README.md

## 👑 WHAT MAKES THIS PROJECT ELITE

* Real-world emotional problem: JEE pressure
* ML + product thinking + UX
* Personalized advice with GPT
* Live demo you can share
* Makes your school proud AND wows recruiters

## 🧠 FINAL MESSAGE

This isn’t just ML — it’s impact. It’s design. It’s empathy through code.

“If one scared student decides to pause, reflect, and make a healthier choice — you didn’t build an app, you built a life raft.”

You’ve got 2 months. Let’s build this, launch it, and walk into your old school like the dropout whisperer you were born to be.