ADVANCED AI, ROBOTICS & DATA SCIENCE PROGRAM (CLASS 9–11)

12-MONTH STRUCTURED CURRICULUM | NEP-2020 ALIGNED

Month 1: AI Foundations

- Types of AI, real-world applications

- AI pipeline: Data $\rightarrow$ Model $\rightarrow$ Prediction

Month 2: Python Basics

- Variables, loops, conditions

- Projects: Calculator, number games

Month 3: Python Intermediate

- Lists, dictionaries, functions

- Student data management project

Month 4: Data Science Essentials

- Data types, cleaning, visualization

- Mini-project: Weather/attendance analysis

Month 5: Robotics Engineering

- Microcontrollers, circuits, motors

- Build: Line follower robot basics

Month 6: Sensors & Automation

- IR, ultrasonic, flame, DHT sensors

- Projects: Safety alarm, smart dustbin

Month 7: Machine Learning Basics

- Classification, regression

- ML tools & hands-on image classifier

Month 8: Computer Vision

- Object detection, face detection basics

- Projects: Gesture control, CV filters

Month 9: NLP & Chatbots

- Text processing, keywords, intents

- Build rule-based chatbot

Month 10: IoT & Cloud Concepts

- Smart devices, automation

- Projects: Smart home, weather station

Month 11: Design Thinking & Innovation

- Empathize, Define, Ideate, Prototype

- Community problem-solving project

Month 12: Final Project & Exhibition

- AI model, robotics prototype, or IoT project

- Science fair / ATL-ready demo