ROBOTICS & ARTIFICIAL INTELLIGENCE CURRICULUM

Classes VI to X (CBSE & ICSE Aligned)

Program Overview

This curriculum is designed to introduce students to **Robotics, Electronics, Programming, Artificial Intelligence, and Automation** through a progressive, hands-on, and concept-driven approach. It aligns seamlessly with the **NEP 2020**, CBSE Skill Education Framework, and ICSE learning objectives.

Core Program Emphasis

Conceptual Clarity	**Real-world Applications**	**Logical Thinking**	**Ethical Tech Use**

Pedagogical Approach: The 4E Model

Explain → Explore → Experiment → Evaluate

- **Activity-Based:** Project-driven learning with age-appropriate complexity.
- **Integrated Learning:** Theory combined with simulation and hands-on construction.
- **Continuous Assessment:** Observation, projects, worksheets, and presentations.

Learning Progression Model

Class VI	Class VII	Class VIII	Class IX	Class X
Foundations Robotics & Electronics	**Applied Robotics** Automation & Sensors	**Advanced Robotics** Coding & Arduino	**Robotics & AI** Simulation & Foundations	**Python & AI** Advanced Systems

"Empowering students with 21st-century skills for a future in Engineering and Innovation."

XROBOTICS

Detailed Curriculum

CLASS VI
FOUNDATIONS OF ROBOTICS

Duration: 36 Sessions

Curriculum Breakdown:

- **Module 1: Intro to Robotics**
  Impact on daily life, basic components.
- **Module 2: Electronics Basics**
  Electricity, circuits, & safety practices.
- **Module 3: Magnetism**
  Electromagnets & magnetic fields.
- **Module 4: Mechanical Models**
  Building motor-based systems.

Major Projects

- ✓ Wireless Electricity Demo
- ✓ Electromagnet System
- ✓ LED Glowing Circuit
- ✓ Obstacle Detection System
- ✓ Wind Driven Car & Fan
- ✓ Switch-Based Alarm System

CLASS VII
APPLIED AUTOMATION

Duration: 36 Sessions

Curriculum Breakdown:

- **Module 1: Advanced Circuits**
  Strengthen electronics knowledge.
- **Module 2: Sensor Systems**
  Intro to automation sensors.
- **Module 3: Measurement**
  Using multimeters & power systems.
- **Module 4: Microcontrollers**
  Working principles & logic.

Major Projects

- ✓ Manual Traffic Light System
- ✓ Flame Detection System
- ✓ Lemon Battery Experiment
- ✓ Manually Controlled Car
- ✓ Smart Security System
- ✓ Smart Lighting System

CLASS VIII
CODING & ARDUINO

Duration: 36 Sessions

Curriculum Breakdown:

- **Module 1: Design Thinking**
  3D Modeling with TinkerCAD.
- **Module 2: Logic Building**
  Programming with Scratch.
- **Module 3: Arduino Basics**
  Hardware & Coding fundamentals.
- **Module 4: Smart Systems**
  Integrating sensors & actuators.

Major Projects

- ✓ 3D House, Dice & Chain Models
- ✓ Scratch Games (Maze)
- ✓ Smart Door Lock System
- ✓ Gas Alert & Fire Extinguisher
- ✓ Temperature Monitor
- ✓ Obstacle Avoiding Car

CLASS IX
ROBOTICS & AI

Duration: 36 Sessions

Curriculum Breakdown:

- **Module 1: Robotics Theory**
  Joints, motion & degrees of freedom.
- **Module 2: AI Foundations**
  AI vs Human Intelligence, Ethics.
- **Module 3: Simulation**
  Visualizing systems in TinkerCAD.
- **Module 4: Project Design**
  Designing robotic integrations.

Key Assessments

- ✓ Classify Robots (Structure)
- ✓ TinkerCAD Simulation Activities
- ✓ Hands-on Robotic System Design
- ✓ Robotics Assignments (3)
- ✓ Present Project-Based Solutions

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CLASS X

PYTHON, AI & ADVANCED ROBOTICS

Duration: 36 Sessions

Advanced integration of Code, AI, and Hardware.

Curriculum Breakdown:

- **Module 1: Python Mastery** - Structured programming, data structures.
- **Module 2: AI & ML Basics** - Project lifecycle & ML concepts.
- **Module 3: Intelligent Robotics** - Applying AI to autonomous systems.
- **Module 4: Final Capstone** - Documentation & Presentation.

Major Projects:

- 12+ Python Projects
- Line Following Robot
- Voice Controlled Robot
- AI Waste Management
- Intelligent Simulation

Board Exam Ready

Assessment & Tools

Methodology:

- Worksheets & Concept Checks
- Practical Circuit Testing & Mini-Projects
- Viva, Demonstration & Documentation

Resources:
Breadboards, Sensors, Arduino Kits, TinkerCAD, Scratch, Python IDE

Ready to Join?

Give your students the tools to build the future.

SCHEDULE A DEMO

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