Class 3 (Beginner Level – Exploration & Fun Learning)

1. Basic Electronics

1. Introduction to electricity (Battery, LED, wires)
2. Open & Close Circuit Activity
3. Make a **LED Torch**
4. Paper Circuits (Greeting Card with LED)
5. Conductors vs Insulators Activity

2. Mechanics (Basic Concepts)

1. Push & Pull activities
2. Simple Machines (Lever using scale)
3. Make a **Moving Paper Car**
4. DIY Windmill

3. Creative STEM Projects

1. Light-up Greeting Card

2. DIY Traffic Signal using paper + LED
3. Shadow & Light experiments

4. Beginner Coding (Visual)

1. Introduction to Scratch Jr / PictoBlox Jr
2. Create:
○ Moving Character Animation
○ Simple Story Animation

Class 4 (Intermediate Level – Understanding & Building)

1. Basic Electronics

1. Series & Parallel Circuits
2. Make a **Buzzer Circuit**
3. DIY **Switch-based Circuit**
4. Introduction to Breadboard (basic use)

2. Mechanics & Models

1. Make a **Balloon Powered Car**
2. Pulley System Model
3. Simple Hydraulic Lift (Syringe-based)

3. Science + STEM Projects

1. Water Level Indicator (basic, without Arduino)
2. Air Pressure Experiment

3. Sound & Vibration Model

4. Coding (Block-Based)

1. Introduction to Scratch / PictoBlox
2. Projects:

- Quiz Game
- Simple Maze Game
- Animated Story with Logic

Class 5 (Pre-Advanced Level – Logic + Introduction to Automation)

1. Electronics + Intro to Arduino

1. Revision of Circuits
2. Introduction to Arduino (very basic)
3. LED Blink using Block Coding
4. Light Sensor (LDR) basic concept demo

2. Robotics Basics

1. Introduction to Motors
2. Make a **Simple Moving Robot (Battery based)**
3. Line-following concept (theory/demo)

3. STEM Projects

1. Water Alarm (improved version)

2. Mini Smart Home Concept (basic)
3. Magnetic Experiment Models

4. Coding (Intermediate)

1. Conditions (IF-ELSE)
2. Loops
3. Projects:
○ Interactive Game
○ Score-based Game
○ Simple AI-based project (like image recognition demo)

Final Projects (Class 3–5 Combined Showcase)

1. Smart Traffic Light Model
2. Balloon Car Race
3. Interactive Game Presentation
4. Simple Smart Home Model

Content (6-8)

1. Making a Model for Measuring Mass, Force, and Pressure Using a Load Cell

2. Building a Decibel Meter with Sound-Sensitive LEDs using Arduino

3. Constructing a Pantograph: Understanding Simple Machines

4. Making an Air Powered Car

5. Making a DIY model of Newton's Disc

6. Making a Jumping Paper Frog with LED Eyes

7. Making a model demonstrating 'Persistence of Vision' (POV)

8. Making Water Level Detecting Alarm

9. Making Artistic Circuits using Dough to test Conductors and Insulators

10. Making a DIY Salt-water Battery

11. Making a Model for Identifying Junk and Healthy Food Using Electronics

12. Making an Animation Showing Healthy and Junk Food using Scratch or PictoBlox

13. Creating an Animation Showing Self-Pollination and Cross-Pollination Using Scratch or Pictoblox

14. Making a DIY Model to Learn Types of Triangles

15. Understanding Algebraic Identities using Cardboard Tiles

16. Constructing a DIY Electronic Model to Understand Fractions

17. Making a DIY Model to Learn Types of Quadrilaterals through Paper Electronics

Content (9-10)

1. Learning Ohm's Law through Simulation and Hands-on Activities
2. Building a Gyroscope to Demonstrate Centrifugal Force and Inertia
3. Building a Wired Remote-Controlled Car and Measuring Its Velocity and Acceleration Using a Mobile App
4. Making a Model of Newton's Boat
5. Vehicle speed detection system using IR sensors
6. Making a Model for Autonomous Emergency Braking System
7. DIY Paper Speaker: Exploring Sound Waves and Electromagnetism
8. Blood Donor and Receiver Compatibility Model
9. Blood Donor and Receiver Compatibility Model Using Arduino Uno and Block Coding
10. DIY model that demonstrates the Five Stages of Blood Circulation using Tinkercad Simulation and Electronics
11. Creating an Animation of the Five Stages of Blood Circulation Using Scratch or PictoBlox
12. Sex Determination Model using Arduino, PictoBlox, and Dabble Application
13. Building a Functional Gripper using Cardboard
14. Demonstration of Electrolysis of Water using Pencil Electrodes
15. Building a Model to Detect and Measure CO2 Generated from an Acid-Base Reaction using Arduino and MQ-135 Sensor
16. Making a Model for Detecting Heat Generated During Exothermic Chemical Reactions using Arduino

17. Making Machine Learning based pH Card Recognition System
18. Building Models of Clinometers for Measuring Height

19. Making a Model to Learn Trigonometric Ratios
20. Calculating Surface Areas of Paper 3D Shapes using 2D Net Pull-Up Models
21. Constructing a Pythagorean Theorem Model using Graph Paper and Cardboard
22. Building a Temperature and Humidity Monitoring System with Data Visualization

23. Creating Pie Charts using Teachable Machine, Image Recognition and MS Excel

Level 1

1. BASIC ELECTRONICS

1. Paper Circuits
2. Introduction to Breadboard
3. Series and Parallel Circuits
4. Traffic Light Circuit with Switch

2. MECHANICS

1. DIY Grabber
2. Robotics Arm

3. 3D DESIGN & PRINTING

1. Design and Print a 3D Keychain
2. Design and 3D Print a Cup

4. DATA VISUALIZATION

1. How do I spend my day?

5. DESIGN AND ENTREPRENEURIAL THINKING

1. Design Thinking and Prototyping(Redesign Auto Rickshaw)
2. Final Project: Design Thinking to make classroom environment improvements

Level 2

1. BASIC ELECTRONICS

1. Automatic Street Light using LDR
2. Solar Powered Electric Fan
3. Basics of Arduino-1
4. Basics of Arduino -2

2. MECHANICS

1. Hydraulic Lift
2. BugBot

3. 3D DESIGN & PRINTING

1. Design a Rocket and 3D Print it
2. Design a Simple Mobile Holder and 3D Print it

4. DESIGN AND ENTREPRENEURIAL THINKING

1. Design a Room for Elderly
2. Final Project: Ensure Water Conservation