EDSOLS
INNOVATIONS PRIVATE LIMITED

IoT and Robotics Labs & Training Program Overview

INTEGRATED IOT SYSTEMS

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Dive into the world of IoT with micro:bit and sensors, embarking on a journey of innovation. From crafting a Smart Home to designing an Obstacle Avoidance Car, each project promises a mastery of cutting-edge concept programming finesse, sensor integration, and autonomous systems.

BLOCK-BASED PROGRAMMING:

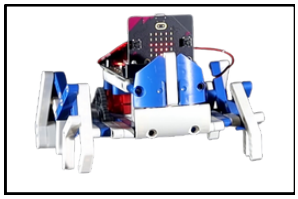
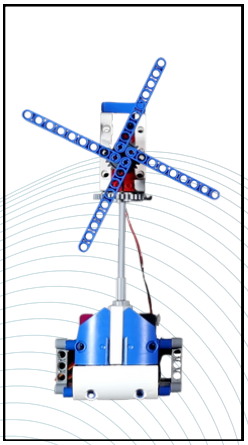
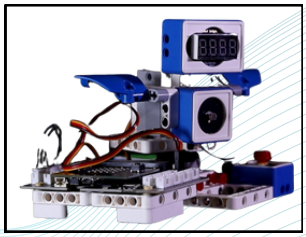
Empower students with a block-based programming approach – drag-and-drop code blocks to create personalized programs. Dive into robotics and IoT, discovering innovative projects and laying the foundation for future learning

CUSTOMIZED KITS

- Micro:Bit v 2.2 Go Kit
- Smart Car Kit
- Modular P&P Sensor Kit
- Smart Home Kit
- Building Blocks Kit

IOT PROJECTS




KEY COMPONENTS

- BBC Micro:Bit V2.2
- Ultrasonic Sensors
- IR Sensors
- Soil Moisture Sensor
- Colour Sensor
- RGB and Button Module
- Joystick and Building Blocks Kit
- OLED Display
- Humidity Sensor
- Temperature Sensor

HANDS ON PROJECTS

- Smart home
- Obstacle Avoidance Car
- Dancing Spider Bot
- Oscillating Fan
- Magnum Wheel Car
- Automatic IOT Door
- Moving Basket with Score Counter
- Sunflower
- Ultrasonic Range Finder
- Catapult
- Clip Robot

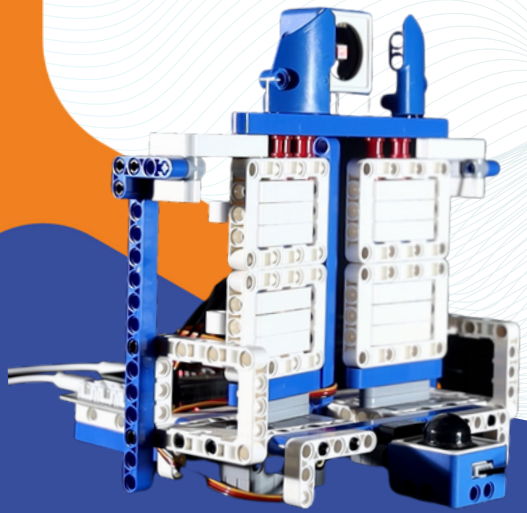
CURRICULUM FOR IOT & ROBOTICS TRAINING

OBJECTIVE

To provide hands-on with supporting hardware and software modules for the students to experience the Theory concepts of Internet of Things (IoT) and Robotics concepts studied in class with practical project-based learning.

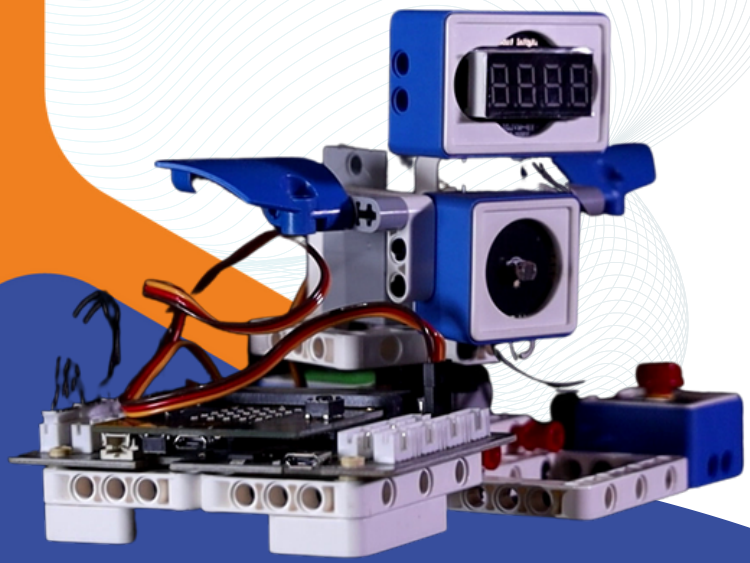
Our curriculum focus on:

- Introduction Micro:Bit and MakeCode Graphical Programming
- Inculcate Design Thinking and Application based problem-solving approach
- Algorithmic Thinking and Modular programming
- Experiential Learning
- Introducing Programming Concepts (Loops, Conditional Statements, Logical Statements, etc.)
- Building Block based Robotic design and programming
- Sensor Integration and Introduction to the Internet of Things (IoT)
- Introduction to Automation and Sensor Fusion



LEARNING OUTCOMES

- Build Simple Robots with Blocks and Motors and Control them using MicroBit
- Setup and use of the Light Sensor with the MicroBit to track light intensity.
- Program to Create Sensor integrated Block based robots for applications like Automated Door, Moving Basket Counter
- Assembling the Robot Car and writing a simple program to test the basic movements and learn how to control the movement speed of the car
- Programming Fundamentals (Conditional Statements and Loops) using MakeCode Graphical Programming Language / Python. Setup and use of Infrared sensors for Black Line Tracking
- Programming Fundamentals (Conditional Statements) using MakeCode Graphical Programming Language / Python. Setup and use of Ultrasonic Sensors for Obstacle Avoidance
- Setup and use of Ultrasonic Sensors and/or Infrared Sensors for Object following
- Programming Fundamentals (Variables, Wireless Communication using Bluetooth).
- Set up and use the Micro:Bit remote to control the Smart Car via Bluetooth



GRADE 1

(THEORY - 30 HOURS & PRACTICAL – 30 HOURS)

- Introduction to Microbit and Makecode based Programming.
- Programming in Makecode with simple examples
- Project 1: Getting Started with Microbit
- Project 2: Rock Paper Scissors Game
- Project 3: Name Tag
- Project 4: Clap Lights
- Project 5: Touch Sensor
- Project 6: Step Counter
- Project 7: Light Meter
- Project 8: Dice
- Project 9: Story Telling
- Project 10: Flashing Heart

GRADE 2

(THEORY - 30 HOURS & PRACTICAL – 30 HOURS)

- Programming in Makecode with simple examples
- Programming Concepts: Conditional Statements, Loops and Logical Statements
- Robotics and Micro:Bit Smart Car
- Project 1: Digital Thermometer
- Project 2: Guitar
- Project 3: Compass
- Project 4: Counter
- Project 5: Sound Meter
- Project 6: Door Alarm
- Project 7: Reaction Game
- Project 8: Metronome
- Project 9: Scratch Jumping Game
- Project 10: Stopwatch

GRADE 3

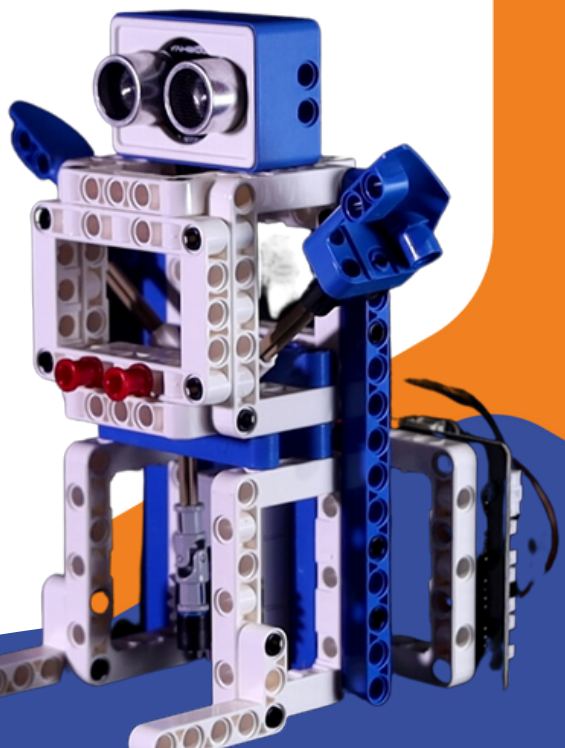
(THEORY - 30 HOURS & PRACTICAL – 30 HOURS)

- Advanced Makecode Blocks
- Introduction to Motors, Servos and Actuators and their Control
- Programming Concepts continued: Conditional Statements, Loops and Logical Statements
- Project 1: Fruit Piano
- Project 2: Excavator
- Project 3: Basic Car
- Project 4: Changing Face Game
- Project 5: Proximity Alarm
- Project 6: Pressure Switch
- Project 7: Free Style Robot
- Project 8: Carousel
- Project 9: Clip Robot
- Project 10: Tilt Alarm

GRADE 4

(THEORY - 30 HOURS & PRACTICAL – 30 HOURS)

- Customizing Makecode Blocks
- Advanced Programming Concepts: OOPS
- Project 1: Walking Spider
- Project 2: Catapult
- Project 3: Oscillating Fan
- Project 4: Unicycle
- Project 5: Dancing Spider
- Project 6: Walking Spider with Remote
- Project 7: Bi-Ped Robot
- Project 8: Catapult with Remote
- Project 9: Smart Lights
- Project 10: Motion Detector and Control Systems



GRADE 5

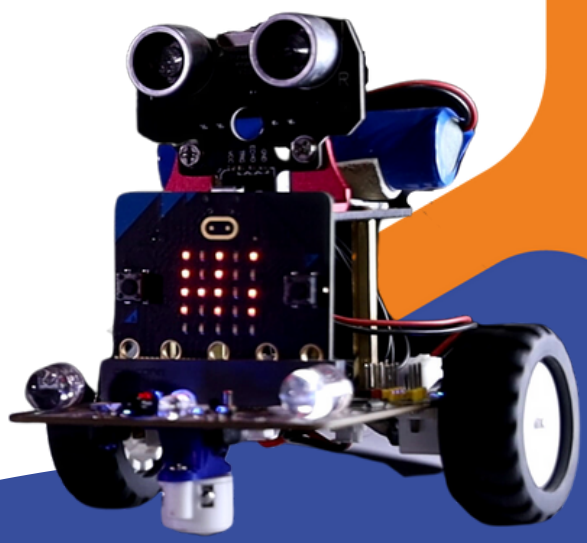
(THEORY - 30 HOURS & PRACTICAL – 30 HOURS)

- Introduction Python and JavaScript programming
- Smart Car and Its Applications
- Project 1: Smart Car – Basic Movements and Speed Control
- Project 2: Smart Car – Obstacle Avoidance (IR Sensors)
- Project 3: Smart Car – Obstacle Avoidance (Ultrasonic Sensors)
- Project 4: Smart Car – Object Following (IR Sensors)
- Project 5: Smart Car – Object Following (Ultrasonic Sensors)
- Project 6: Smart Car – Black Line Follower
- Project 7: Smart Car – Car Control with remote
- Project 8: Smart Car – Maze Solving
- Project 9: Snake Game
- Project 10: Ping Pong Game

GRADE 6

(THEORY - 30 HOURS & PRACTICAL – 30 HOURS)

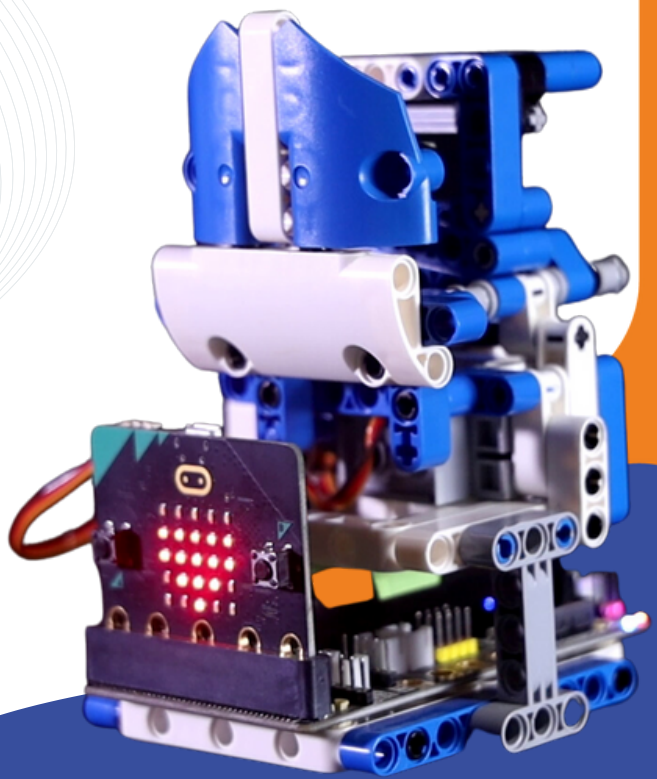
- Python and JavaScript programming with simple examples
- Sensor Integration and Control
- Advanced Programming Concepts: OOPS
- Project 1: Emergency Lamp
- Project 2: Running Box
- ·Project 3: Smart Wiper
- Project 4: Range Finder
- ·Project 5: Temperature and Humidity Meter
- Project 6: Piggy Bank
- Project 7: Lifting Platform
- Project 8: Pick and Place Robot
- Project 9: Fishing Bot
- Project 10: Color Sorter (Sensor Based)



GRADE 7

(THEORY - 30 HOURS & PRACTICAL – 30 HOURS)

- Python and JavaScript programming continued
- Sensor Integration and Control
- Advanced Programming Concepts: OOPS
- Project 1: Moving Basket with Score Counter
- Project 2: Automatic Door with Button
- Project 3: Automatic Door with Sensor
- Project 4: Sunflower
- Project 5: Smart Home 1: Smart Door Control
- Project 6: Smart Home 2: Advanced Smart Home Control
- Project 7: Smart Home 3: Door Password Access Control
- Project 8: Smart Home 4: App Control
- Project 9: Smart Car Control with Gyro
- Project 10: Autonomous Car



INTRODUCING NEXT-GEN LEARNING

EDSOLS

Dive into the world of Artificial Intelligence with our state-of-the-art AI Labs. Students will grasp fundamental concepts, learn implementation strategies, and acquire techniques that empower them to generate valuable insights. Prepare for the future by staying ahead of upcoming industries and being proactive in the face of change.

WHY CHOOSE OUR LABS?

- Cutting-edge Curriculum
- Hands-on Experience
- Future-Ready Education

STUDENTS WILL GAIN

- A Foundation for Future Learning
- Hands-on Implementation Experience
- Techniques for Valuable Insights
- Understanding of AI Concepts

RESOURCES TO BE PROVIDED BY THE SCHOOL:

- Conference Rooms with projectors for the Theory Sessions
- Computer Lab with basic Intel i3 Computers
- Computers Running Windows Operating System
- Internet Connectivity (Optional)
- Workbench Tables for Setup and Training

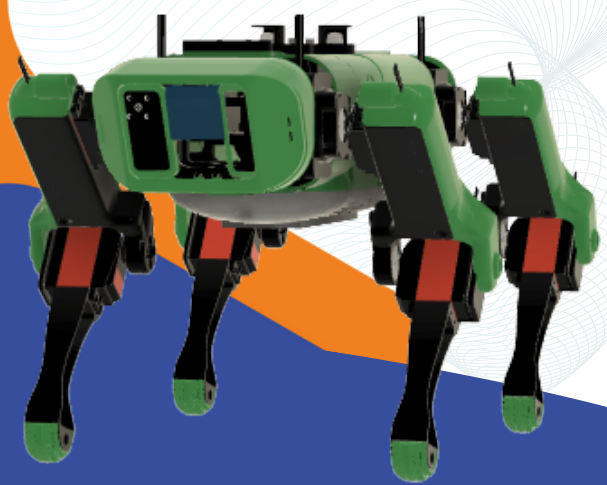
RESOURCES BROUGHT IN BY EDSOLS:

- All Hardware and Software Required for the training program
- Industry Certified Trainers will be Provided
- Curriculum Design
- Online Support

SOFTWARE PACKAGE

50 + IoT and Robotics Projects with Lab Manuals and Tutorials will be provided

We kindly request you to feel free to get in touch for any clarity required.
Thank you for the opportunity to serve you



EDSOLS
INNOVATIONS PRIVATE LIMITED
34, 6th Main, Banaswadi Main Road,Banaswadi,
Bangalore,Karnataka, India - 560043
+91 - 8904600776| sales@edsols.in
www.edsols.in