

APPSKILLING

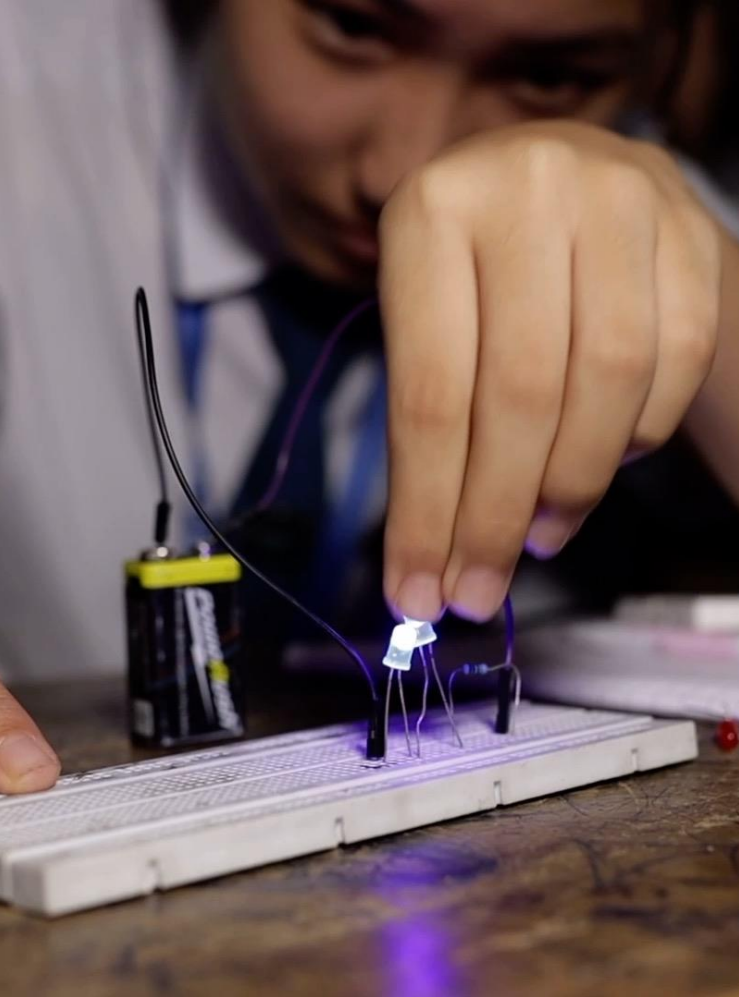
# Empower Students

with Real-World Computer Science Skills



OPEN FOR 2025

Introduce your students to the exciting world of IoT, coding, and app development with our course: *Build Your Own Weather Station With Power Apps*. Designed to provide practical skills, this course equips students with the knowledge they need to solve real-world challenges through technology.



## A HANDS-ON COURSE FOR FUTURE INNOVATORS

### **Interactive Learning:**

Students build their own weather station using Arduino and Power Apps.

### **Real-World Skills:**

Students learn IoT, basic electronics, and app development.

### **Partnership with Industry Experts:**

Microsoft TEALS collaboration enhances learning.

## BENEFITS FOR YOUR SCHOOL

By participating in this program, your school will:

- ✓ Equip students with 21st-century skills in coding and IoT
- ✓ Encourage problem-solving and creativity through technology
- ✓ Foster engagement in STEM subjects and prepare students for future careers



# COURSE BREAKDOWN

## “Build your own weather station with power apps”



### Month 1: Introduction to IoT and Arduino

Students learn the fundamentals of IoT and basic electronics, building simple circuits and programming with Arduino.

*Example: “Create a blinking LED project using Arduino.”*

#### Session 1: Course Introduction and Overview

- Objective: Provide an overview of the course, outline the key topics, and set expectations for the students.
- Introduction to IoT: Explain the concept of the Internet of Things (IoT) and its significance in the modern world, especially its potential impact on rural communities (e.g., smart farming, remote health monitoring).

#### Session 2: Introduction to Basic Electronics

- Introduction to basic electronics components (LEDs, resistors, batteries)
- Simple hands-on activity: Build a basic LED circuit on a breadboard
- Required: Breadboards, LEDs, resistors, batteries, jumper wires

#### Session 3: Understanding circuits

- Explanation of circuit diagrams and their components
- Hands-on activity: Create a simple series and parallel circuit
- Required: Breadboards, wires, LEDs, resistors, batteries

#### Session 4: Introduction to Arduino

- Overview of Arduino and its use in simple projects
- Introduction to the Arduino board and basic components
- Hands-on: Write and upload a simple blinking LED program
- Required: Arduino boards, USB cables, LEDs, resistors, laptops with Arduino IDE

#### Session 5: Basic LED Project

- Building on the blinking LED project Introduction to using buttons with Arduino
- Simple project: Control an LED with a button
- Required: Arduino boards, buttons, LEDs, resistors, jumper wires

#### Session 6: RGB LED Control

- Introduction to RGB LEDs and their control
- Hands-on project: Create a program to change RGB LED colors
- Required: Arduino boards, RGB LEDs, resistors, jumper wires

#### Session 7: Using an IR Sensor

- Introduction to IR sensors and their applications
- Hands-on project: Detecting obstacles with an IR sensor and Arduino
- Required: Arduino boards, IR sensors, LEDs, resistors, jumper wires

### Session 8: Combining LEDs and Sensors

- Integrating RGB LEDs with IR sensors
- Hands-on project: Create an interactive LED display based on sensor input
- Required: Arduino boards, IR sensors, RGB LEDs, resistors, jumper wires

### Session 9: Intermediate Arduino Projects

- Building a more complex project using what has been learned
- Example: A simple traffic light system using LEDs and buttons
- Required: Arduino boards, buttons, LEDs (red, yellow, green), resistors, jumper wires

### Session 10: Review and Project Work

- Review of all concepts covered in Arduino sessions
- Hands-on project: Create a mini- project combining LEDs and sensors
- Required: Arduino boards, various sensors, LEDs, resistors, jumper wires



## Month 2: App Development with Microsoft Power Apps

Students transition to building mobile and web apps using Microsoft Power Apps.

*Example: "Create a simple app to control the Arduino-based weather station."*

### Session 11: Introduction to PowerApps

- Overview of Power App Inventor and its uses
- Setting up the App Inventor environment
- Hands-on: Create a simple "Hello World" app
- Required: Laptops with internet access, Power App setup

### Session 12: Basic App Development

- Using basic components (buttons labels, textboxes) in PowerApps
- Hands-on: Create a simple login page app
- Required: Laptops with internet access, Power App setup

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### Session 13: Creating Multi-Screen Apps

- Introduction to multiple screens in App Inventor
- Hands-on project: Create an app with navigation between screens
- Required: Laptops with internet access, PowerApps setup

### Session 14: Connecting App Inventor to Arduino

- Introduction to Bluetooth modules for Arduino
- Hands-on project: Control an LED using a Bluetooth module and PowerApps
- Required: Arduino boards, Bluetooth modules, LEDs, resistors, laptops with Power App setup

### Session 15: App to Control Arduino via Bluetooth basic LED Project

- Step-by-step guide to create an app for controlling Arduino
- Hands-on project: Create an app to turn an LED on and off using Bluetooth
- Required: Arduino boards, Bluetooth modules, LEDs, resistors, laptops with PowerApps setup



## Month 3: Data Integration with Microsoft Azure IoT

Students connect their weather station to the cloud using Microsoft Azure IoT, allowing them to monitor real-time data.

*Example: "Send and visualize weather data on Azure IoT Hub."*

### Session 16: Introduction to Azure IoT

- Simple explanation of cloud computing and Azure IoT
- Setting up a basic Azure account Overview of Azure IoT Hub
- Required: Laptops with internet access, Azure accounts

### Session 17: Connecting Arduino to Azure IoT

- Sending data from Arduino to Azure IoT Hub
- Use of temperature and moisture sensors for data collection
- Required: Arduino boards, sensors (temperature, moisture), jumper wires, internet access
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### Session 18: Simple Data Monitoring with Azure IoT

- Monitoring sensor data using Azure IoT Hub
- Hands-on: Displaying real-time sensor data on Azure
- Required: Laptops with internet access, Azure accounts, Arduino boards, sensors



## Month 4: Final Project and App Development

Students develop a complete app to display weather data collected from their weather station.

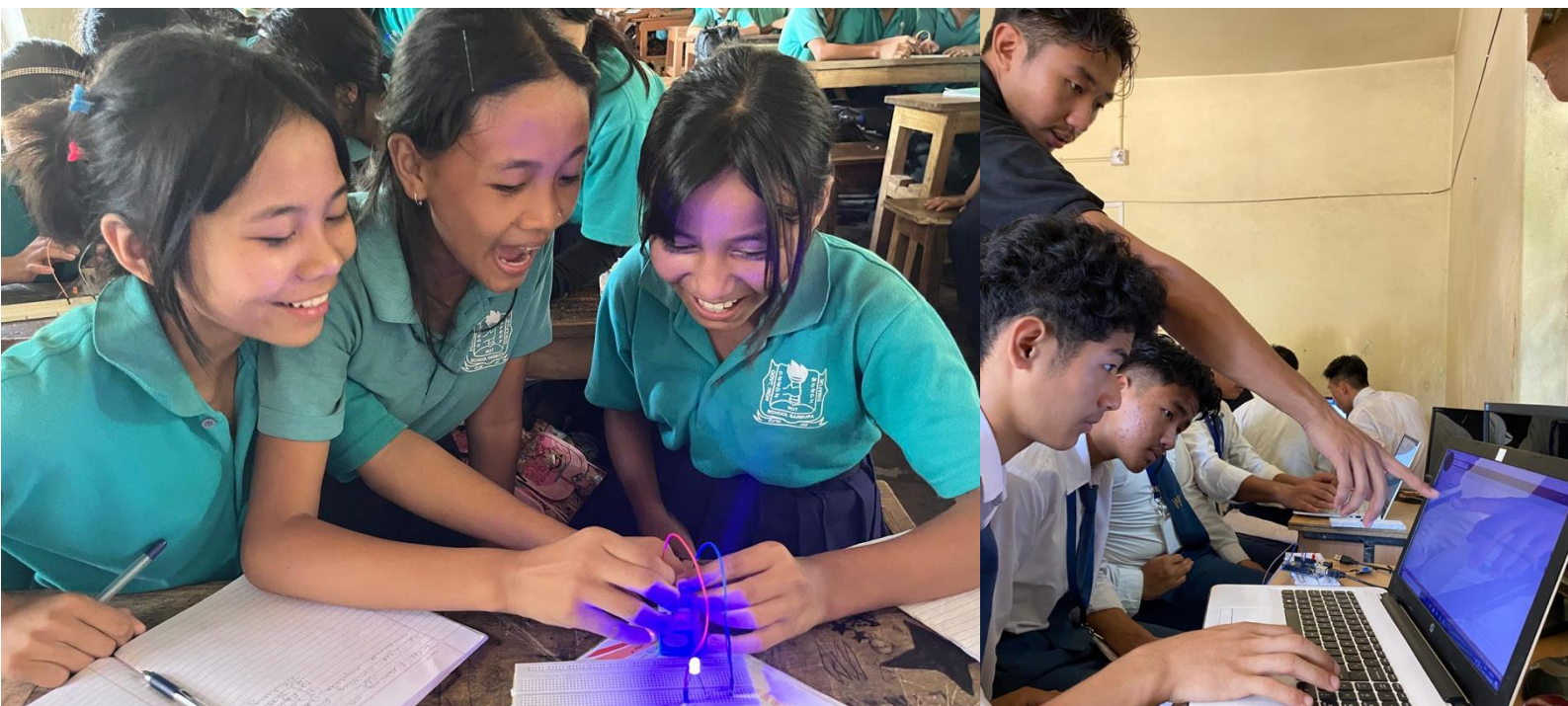
*Example: "Create an app to monitor temperature and moisture in real-time."*

### Session 19: Getting Started with PowerApps

- Overview of Microsoft PowerApps Simple explanation of app development
- Hands-on: Create a basic app to display data
- Required: Laptops with internet access, PowerApps accounts

### Session 20: PowerApps Project

- Developing a simple application using PowerApps Canvas
- Hands-on: Create an app to display sensor data collected from IoT devices
- Required: Laptops with internet access, PowerApps accounts



# READY TO EMPOWER YOUR STUDENTS?

Join us in bringing real-world computer science skills to your students. Help them create, innovate, and solve problems with cutting-edge technology.



Hands-on Learning for the Future of  
Technology

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to get started