

30 Days Arduino & ESP32

Curriculum - தமிழ்

Digital IO's | Analog IO's | Sensors | ADC | Displays | Motors | PWM | UART | SPI |
I2C | Robotics | Gaming | IoT | Webserver | Cloud | Computer Vision | A.I

WEEK 1 – Foundations: Electronics, Arduino Basics, Digital I/O & Analog I/O

Day 1: Introduction to Embedded Systems, Basic Electronics & Signals

Project 1: Arduino IDE Setup (Arduino UNO & ESP32), How to write code for any sensor easily

Day 2: Arduino Programming Basics & Serial Monitor

Project 2: Hello Arduino – Print Name & Blink LED

Day 3: Digital Input/Output: Push Button, Buzzer, LED

Project 3: Doorbell system

Day 4: Digital Sensors: PIR, IR, LDR, Sound, Gas Sensors

Project 4: Stair Light using LDR, PIR

Day 5: Analog Input/Output: Potentiometer, PWM

Project 5: Brightness adjustment using Potentiometer, LED

Day 6: Analog Sensors: LM35, Gas, LDR, DHT11

Project 6: Sensor Data Reporter with Units

Day 7: Motors: DC, Servo, Stepper

Project 7: Speed Control using PWM

Day 8: Ultrasonic Sensor

Project 8: Smart Parking Assistant

Week 2 – Intermediate Electronics, Logic, and Displays

Day 9: Logical Programming

Project 9: Traffic Light Control System

Day 10: LCD Display (16x2 or I2C)

Project 10: Digital Thermometer Display

Day 11: 4x4 Keypad Integration

Project 11: Password Door Lock System

Day 12: 7-Segment Display & Timer Logic

Project 12: Countdown Timer

Day 13: Calculator Logic

Project 13: Resistor Color Code Calculator

Week 3 – Communication Protocols & Control Systems

Day 14: Serial Communication (UART) – HC-05 Bluetooth Module

Project 14: Bluetooth Controlled LED

Day 15: SPI Communication

Project 15: Using MCP3008 ADC with Potentiometer

Day 16: I2C Communication

Project 16: ADXL345 Accelerometer Interface

Day 17: Interrupts in Arduino

Project 17: Speed Measurement System using IR Sensor

Day 18: ESP32 Bluetooth Control + Relay

Project 18: Smartphone-Controlled Home Appliances

Day 19: Motor Driver Basics – L298N with DC Motor

Project 19: Robot Logic Simulation

Day 20: Final Robotics Project – Bringing It All Together

Project 20: Smart Robot (Obstacle Avoidance, Line Follower)

Week 4 – IoT & ESP32 WiFi Capabilities

Day 21: IoT Dashboard with ThingSpeak

Project 21: IoT Weather Station with LM35

Day 22: IoT Control with Blynk

Project 22: Remote Fan/Light Control via Blynk App

Day 23: ESP32 WiFi – UDP Communication

Project 23: Real-Time Sensor Data Streaming via UDP

Day 24: ESP32 WiFi – MQTT Protocol

Project 24: MQTT-based Home Automation System

Day 25: ESP32 WiFi – Web Server

Project 25: Control Fan/LED using Web Interface

Week 5 – Capstone Projects, Python Integration, A.I & OTA

Day 26: Conditional Logic + AI Thinking + Automation

Project 26: Fire Alarm Bot with Buzzer Notification

Day 27: OLED + ADXL + Switch

Project 27: Tilt-Controlled Game on OLED

Day 28: Python Environment Setup + Serial Communication

Project 28: Control Arduino using Python Script

Day 29: Python + Arduino – Computer Vision

Project 29: Face Tracking Eyes

Day 30: ESP32 Over-the-Air (OTA) Updates + Face Recognition

Project 30: Wireless Code Upload + AI Attendance System



 If You are Interested in **ESP32 Starter Kit** : <https://rzp.io/rzp/ESP32StarterKit>

Kit includes, Inside the Links 



📌 If You are Interested in **Arduino + ESP32 Advanced Kit (Mini Lab)** :

<https://rzp.io/rzp/ArduinoESP32AdvancedKit>

Kit includes, Inside the Links 🖱️