

## **Arduino Course Content**

### **Module 1 (Beginner Level) 1 Week**

Introduction to Embedded Systems

Applications and Scope of Embedded System in various industries

Difference between Microprocessor and Microcontroller

Microcontroller Architecture and Interfacing

Overview of Open Source Platform

Introduction to Arduino Platform

Arduino UNO / Mega Board Description (Block Diagram,Architecture,Overview of Technical Specifications)

Arduino IDE (Compiler) Installation

Arduino Sketch Overview

Arduino Basic Statements Syntax

C Programming Basics

Arduino Programming Basics

Installation of Arduino Libraries

Basic Electronics Components, Regulated Power Supply, Batteries,Bread Board,Using Multimeter

I/O Peripherals (LED,16x2 LCD,20x4 LCD,DC Motor,Stepper Motor,Servo Motor,Switch,Matrix Keypad,Relay,Seven Segment Display and Multiplexing)

DC Motor Speed Control Using PWM

Analog sensors (LM35,LDR,Thermistor)

IR Proximity,Flame Sensor,Soil Sensor, Laser Module

Drivers (L293d,L298,ULN2003,ULN2803)

Serial Peripherals (Bluetooth Module,Zigbee Module), Timer Delay

Wireless Communication (RF Transmitter & RF Receiver), HT12E, HT12D

Mini Project

### **Module 2 (Intermediate Level) 1 Week**

Advance sensors (DHT11,HC-SR04,DS18B20,ADXL335, PIR, Gas Sensor)

Joystick Module, Joystick Shield

RFID Reader,GSM,GPS,Touch Screen Shield,TFT LCD Shield,Solid State Relay, Triac  
BT136, DS1307 RTC Module, APR9600 Voice Module,Tone Generation,LM386  
Audio Amplifier

AC Power Control (Light Dimmer,Single Phase Induction Motor Speed  
Control),Peltier Plate,Solar Panel,Solar Charge Controller

Proteus Simulator, Serial Communication (Terminal Software)

Major Project

### **Module 3 (Expert Level) 1 Week**

Advance Sensors HMC5883L Magnetometer,BMP180 Temperature,Pressure and  
Altitude Sensor, Load Cell Using HX711 ,Flow Sensor,MPU6050 Gyroscope,TCS3200  
color sensor)

Fingerprint Module R305 and working with SFG Demo Software for Fingerprint  
Management, Ethernet Shield Wiz5100, Ethernet Module,Cytron Wi-Fi Shield

ESP12E Wi-Fi Module, Dot Matrix Displays, Shift Register ICs

FM Transmitter and Receiver (TEA5767)

Li-Fi (Light Fidelity) Communication

Major Project