ITC
IDEAL TECH COMMUNITY

Fullstack

HTML
CSS
JS

Web design

spring boot
django
ASP.net
php

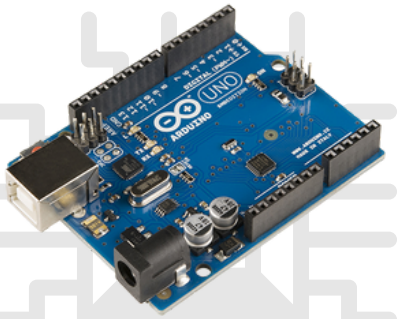
Core

Java
python
Microsoft .NET

Modern Fullstack

MERN
MEAN

EMBEDDED SYSTEMS



ARDUINO

IOT

(Internet of Things)

PlatformIO

For Contact

+91 6380095718

+91 8072848517

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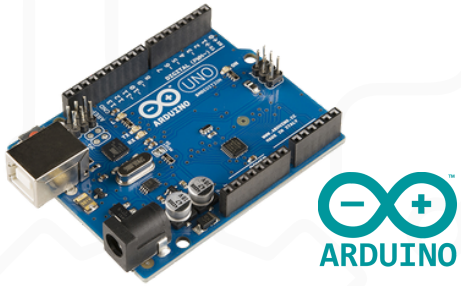
"IF THERE IS NO STRUGGLE, THERE IS NO PROGRESS"

- Frederick Douglass

idealtechcommunity@gmail.com

Syllabus

Embedded system



Core Topics

1. Embedded systems fundamentals and Arduino hardware.
2. Arduino board architecture, pin functions, IDE installation, and basic simulations using wokwi(Simulation).
3. They progress to Arduino C basics like data types, control structures (if/else, loops), functions, and the sketch structure with setup() and loop().

Programming Essentials

1. Arduino C programming emphasizes digital/analog I/O, PWM, timers, and interrupts. Learners write code for blinking LEDs, reading switches, and serial communication (e.g., Serial.print()).
2. Essential practices involve uploading sketches via IDE, debugging, and using libraries for efficiency.

Hardware Interfacing

1. Hands-on modules teach interfacing LEDs, buzzers, LCDs (16x2), keypads, sensors (e.g., temperature LM35, ultrasonic HC-SR04), and motors (DC with L293D, servo).
2. Protocols like I2C, SPI, and serial cover communication; analog inputs use ADC for sensors

Practical Projects

1. Courses end with projects like password door locks, temperature monitors, or LED matrices to integrate concepts. Total duration often spans 30hours, blending theory (20%) and labs (80%).

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Syllabus

Embedded system

₹ 13,000

Fundamentals & Setup

1. Embedded systems concepts & characteristics
2. Arduino Uno architecture (ATmega328P)
3. Pin functions & board layout
4. Arduino IDE installation
5. Simulation tools (Tinkercad/Proteus)
6. First blink program & sketch structure

Programming Core

1. Arduino C basics (data types, variables)
2. Control structures (if/else, for/while loops)
3. Functions & modular programming
4. setup() / loop() architecture
5. Serial communication basics
6. Debugging techniques

Digital & Analog I/O

1. pinMode(), digitalRead(), digitalWrite()
2. LED control & button interfacing
3. Debouncing techniques
4. 3.2 Analog I/O
5. analogRead() & ADC fundamentals
6. PWM with analogWrite()
7. Potentiometer & LDR interfacing

Advanced Peripherals

1. PWM, timers & interrupts basics
2. LCD 16x2 interfacing
3. Motors (DC with L293D, servo)
4. Keypad matrix input
5. Serial protocols (I2C, SPI)

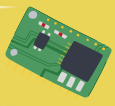
Sensors & Communication

1. Temperature sensors (LM35)
2. Ultrasonic sensor (HC-SR04)
3. Serial communication (Serial.print())
4. Buzzer & basic sound output
5. Multi-sensor data integration

Capstone Integration

1. Password door lock system
2. Temperature monitoring station
3. LED matrix/pattern display
4. Complete system integration
5. Documentation & testing

05 PROJECTS



KIT PROVIDED

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Syllabus

IOT - Internet of Things

PlatformIO

Course Introduction

The IoT with ESP32 & PlatformIO course delivers a 30-40 hour beginner-friendly curriculum for creating Internet of Things projects using ESP32 boards and the free PlatformIO IDE in VS Code

Getting Started with Setup

Students begin with straightforward PlatformIO installation in VS Code, basic platformio.ini setup, and ESP32 essentials including Wi-Fi connectivity, GPIO pins, and built-in LED blinking projects

Wi-Fi Connectivity Basics

Core lessons cover connecting ESP32 to home Wi-Fi networks using simple WiFi library functions, displaying network status via serial monitor, and basic web server creation for remote control.

Sensors and Displays

Hands-on modules teach interfacing beginner sensors like DHT11 temperature/humidity, soil moisture sensors, and 0.96" OLED displays using simple I2C code with ready libraries.

Cloud Dashboard Integration

Easy integration with free platforms like Blynk and ThingSpeak enables real-time data visualization, virtual pins for control, and basic notifications without complex coding.

idealtechcommunity@gmail.com

Syllabus

IOT - Internet of Things

₹ 15,000

Course Introduction & Setup

1. IoT fundamentals & ESP32 overview
2. PlatformIO IDE installation (VS Code)
3. platformio.ini configuration basics
4. ESP32 board setup & first connection
5. Built-in LED blink project
6. Serial monitor debugging

ESP32 Hardware Essentials

1. ESP32 GPIO pins & pin mapping
2. Wi-Fi module introduction
3. Power supply & current requirements
4. Serial communication setup
5. Basic ESP32 libraries overview

Wi-Fi Connectivity Basics

1. WiFi library fundamentals (WiFi.begin())
2. Connecting to home Wi-Fi networks
3. Network status monitoring
4. IP address assignment & display
5. Simple web server creation
6. Remote control via web interface

Sensors Interfacing

1. DHT11 temperature/humidity sensor
2. Soil moisture sensor interfacing
3. I2C protocol basics
4. 0.96" OLED display (SSD1306)
5. Sensor data reading & display
6. Multi-sensor integration.

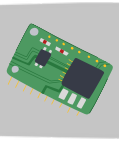
Cloud Dashboard Integration

1. Blynk platform setup & authentication
2. Virtual pins configuration
3. Real-time data visualization
4. ThingSpeak channel creation
5. HTTP data posting
6. Basic notifications & alerts

Practical Projects & OTA

1. Weather monitoring station
2. Automatic plant watering system
3. Room environment monitor
4. 6.2 OTA Updates
5. Basic OTA implementation
6. Wireless firmware updates
7. Web browser/phone deployment

05 PROJECTS



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Syllabus

Web Development

Course Introduction

The Web Development course provides a 15–20 hour beginner-friendly curriculum designed to build modern, responsive, and interactive websites using HTML, CSS, JavaScript, and Bootstrap from scratch.

Getting Started with Setup

Students begin with basic web development setup, including VS Code installation, understanding folder structures, browser developer tools, and running their first HTML page.

HTML Fundamentals

Core lessons focus on HTML5 structure, semantic elements, forms, tables, images, links, audio/video embedding, and best practices for building well-structured web pages.

CSS Styling & Layouts

Hands-on modules teach CSS styling, colors, fonts, box model, Flexbox, Grid layouts, animations, transitions, and responsive design techniques for different screen sizes.

JavaScript Basics & Interactivity

Students learn JavaScript fundamentals such as variables, functions, conditions, loops, DOM manipulation, events, form validation, and creating dynamic user interactions.

Responsive Design with Bootstrap

Easy integration with Bootstrap framework enables fast development of mobile-first websites using grid systems, components, navigation bars, cards, modals, and pre-built UI elements.

idealtechcommunity@gmail.com

Syllabus

Web Development

₹ 6,000

Course Introduction & Setup

1. Introduction to Web Development
2. How websites work (Client–Server model)
3. VS Code installation & setup
4. Folder structure & project organization
5. Understanding browsers & DevTools
6. Creating and running first HTML page

HTML Essentials

1. HTML structure & syntax
2. Text formatting, links & images
3. Lists, tables & forms
4. Semantic HTML5 elements
5. Audio, video & iframe embedding
6. Best practices & accessibility basics

CSS Styling & Layouts

1. CSS syntax & selectors
2. Colors, fonts & backgrounds
3. Box model (margin, padding, border)
4. Flexbox layout system
5. CSS Grid basics
6. Transitions, animations & effects

JavaScript Fundamentals

1. JavaScript basics & syntax
2. Variables, data types & operators
3. Conditions & loops
4. Functions & scope
5. DOM manipulation
6. Events & form validation

Bootstrap & Responsive Design

1. Introduction to Bootstrap framework
2. Bootstrap grid system
3. Navigation bars & buttons
4. Cards, modals & forms
5. Responsive utilities
6. Icons & UI components

Practical Projects & Deployment

1. Personal portfolio website
2. Responsive business website
3. Interactive landing page
4. Form validation project
5. JavaScript mini projects
6. Website hosting (GitHub Pages / Netlify)

05 PROJECTS

LIVE CODING PRACTICE

20 HR

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