



www.vikatworld.com Info@vikatworld.com Contact us: +91 909 5050 353

ADVANCED EMBEDDED SYSTEMS & IoT TRAINING PROGRAM

Course Overview

Learn **Microcontrollers, Embedded C, ARM, RTOS, IoT, Cloud, AIoT, Sensors, PCB, and Real-time Projects** from industry professionals.

COURSE MODULES

FULL ADVANCED SYLLABUS (DETAILED)

MODULE 1 — Embedded Systems Foundation

- Embedded C & C++ Programming
- Data types, pointers, structures, memory management
- Interfacing basics
- Hands-on coding sessions

MODULE 2 — Microcontrollers and Architecture

- ♦ Arduino UNO / Mega
- Digital/Analog I/O
- PWM, Timers, Interrupts
- Sensor interfacing (IR, LDR, Ultrasonic, DHT, RFID)
- ♦ PIC / AVR / ARM Cortex-M

"Discipline Gives Everything"

Head Office



#131-5J, 1st Floor, Bharath Building, Swamy
Nellaiappan High Road, SriPuram, Tirunelveli,
TamilNadu, India – 627 001.

Corporate Office

#4, 7th floor Karimpanal Statue Avenue, G.H
Road, Statue, Thampanoor, Trivandrum,
Kerala, India - 695 001.



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- Architecture
- Keil, MPLAB, STM32CubeIDE
- UART, SPI, I2C Communication

MODULE 3 — Embedded Linux (Advanced)

- Linux OS concepts
- Shell Scripting
- GPIO on Linux
- Yocto / Buildroot Introduction
- Device Drivers (Basics)

MODULE 4 — RTOS (Real-Time Operating System)

- FreeRTOS tasks
- Task scheduling
- Mutex, Semaphores
- Multi-threading in Embedded Systems

MODULE 5 — Internet of Things (IoT)

- ◆ Hardware
- NodeMCU (ESP8266), ESP32

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- WiFi, BLE, MQTT
- Cloud communication
 - ◆ IoT Cloud Platforms
- Thingspeak
- Firebase
- AWS IoT Core
- Blynk IoT
- Azure IoT Hub
 - ◆ IoT Protocols
- MQTT, CoAP, HTTP, WebSocket

MODULE 6 — Sensors & Actuators

- Temperature/Humidity sensors
- PIR, Gas, Sound sensors
- Motors & Relays
- ADC & DAC

MODULE 7 — PCB Design & Hardware Development

- Proteus

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- KiCad / Eagle CAD
- Schematic design
- 2-layer PCB design
- Basic fabrication insights

MODULE 8 — AIoT (Artificial Intelligence + IoT)

- Introduction to TinyML
- ESP32 + AI models
- Edge AI basics
- Real-time object/voice detection

MODULE 9 — Communication Technologies

- GSM / 4G IoT modules
- LoRa, NB-IoT concepts
- GPS tracking
- Industrial IoT basics

MODULE 10 — Final Projects (Choose Any 2–3)

- Smart Home Automation
- Industrial IoT Monitoring System

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- Weather Monitoring with Cloud Dashboard
- Smart Agriculture System
- IoT-Based Security & Surveillance
- Real-time Health Monitoring System
- Smart Energy Meter
- GPS Tracking with Cloud Alerts

CERTIFICATIONS YOU WILL GET

- Embedded Systems Certification
- IoT Engineer Certification
- Project Completion Certificate
- Internship Certificate (Optional)

CAREER PATH AFTER THIS COURSE

You can apply for roles like:

- Embedded System Engineer
- IoT Developer

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- Firmware Engineer
- Robotics Engineer
- Embedded C Programmer
- PCB Design Engineer
- IoT Cloud Developer
- R&D Engineer
- Hardware Developer



Certification

All learners receive an **Industry Recognized Certification** upon course completion.



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