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### **Course: Embedded Systems**

Duration: 60 Hrs (Changeable) | Fees: Individual / Batch

Since 2007, Nestsoft TechnoMaster has been providing training, internships, and services in IT technologies, both online and offline, with the expertise of **over 250 industry experts**. We have delivered internships, training, and seminars to more than 50,000 students, resulting in numerous success stories. **We offer 100% placement support through JobsNEAR.in** 

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### Syllabus on the Next Page ..

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#### Level

\* : Beginner to Intermediate

#### Mode:

\* Live Online / Offline

### Certification

\* : Yes

### **Placement Assistance: Included**

Module 1: Introduction to Embedded Systems (3 Hours)

- \* What are Embedded Systems?
- \* Applications in daily life and industry
- \* Architecture of Embedded Systems
- \* Embedded vs General Purpose Systems

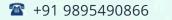
### Module 2: Embedded C Programming (10 Hours)

- \* Basics of C language for microcontroller programming
- \* Data types, operators, loops, and functions
- \* Bitwise operations and memory management
- \* Writing and compiling code for embedded hardware

Module 3: Microcontrollers and; Architecture (8 Hours)

- \* 8051, AVR, PIC, and ARM basics
- Memory and I/O ports
- \* GPIO and register-level programming
- \* Clock, Reset, and Timers

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## Module 4: Arduino Programming and Applications (6 Hours)

- \* Introduction to Arduino environment
- \* Programming digital and analog pins
- \* Sensor integration (temperature, light, motion)
- \* LED, Buzzer, Relay, and LCD interfacing

Module 5: Interfacing and

#### **Communication Protocols (8 Hours)**

- \* ADC and; DAC concepts
- \* Serial Communication: UART, I2C, SPI
- \* Interfacing with external peripherals
- \* Interrupts and timers

Module 6: Real-Time Operating Systems (RTOS) – Basics (4 Hours)

- \* RTOS vs Bare-metal programming
- \* Tasks, Semaphores, Queues
- \* Basic implementation using FreeRTOS

Module 7: Simulation, Debugging and; Tools (5 Hours)

- \* Using Proteus, Keil µVision, Arduino IDE
- \* Debugging techniques
- \* Logic analyzer basics
- \* Use of multimeter and oscilloscope (intro level)

Module 8: Introduction to IoT with Embedded Systems (4 Hours)

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\* What is IoT and; how embedded systems fit in

### Wi-Fi module integration (e.g., ESP8266)

- \* Sending data to cloud platforms
- \* Mini IoT project demo

### Module 9: Capstone Project (10 Hours)

- \* Select a project
- \* (Home automation / Security system / Sensor logger)
- \* Build, program, test and; demonstrate
- \* Document the project for certification
- \* Instructor review and feedback

#### Tools and; Kits Used

- \* Arduino Uno / NodeMCU / PIC/STM32 (as per batch)
- \* Proteus / MPLAB / Arduino IDE / Keil µVision
- \* Sensors, Relays, LCDs, Buzzer, etc.

(Click on Course for more details)

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### - Thank You -

N.B:This syllabus is not final and can be customized as per requirements / updates.

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