TS
TECH TEACH
EDUCATIONAL SOLUTIO

Embedded Systems

OUR MISSION :

"Our mission is to empower learners worldwide through innovative technology, personalized learning experiences, and accessible educational resources. We strive to cultivate a community where every individual can achieve their full potential, regardless of their background or circumstances."

OUR VALUES :

"To pioneer the future of education by leveraging cutting-edge technology to make learning more engaging, effective, and inclusive. We envision a world where education transcends boundaries, creating opportunities for lifelong learning and fostering a society enriched by knowledge and creativity."

COURSE CURRICULUM:

Week 1: Introduction to Embedded Systems

- Day 1-2: Overview of Embedded Systems
  - Definition, applications, and market trends.
  - Basic architecture and components of embedded systems.
- Day 3-4: Introduction to Microcontrollers and Microprocessors
  - Differences between microcontrollers and microprocessors.
  - Key features and examples of popular microcontrollers (e.g., AVR, ARM Cortex).
- Day 5: Development Environments and Tools
  - Setting up IDEs (e.g., Keil, Arduino IDE, MPLAB).
  - Introduction to compilers, debuggers, and simulators.

COURSE CURRICULUM:

Week 2: Basic Electronics and Hardware Interfacing

- Day 1-2: Fundamental Electronics
  - Basic concepts of voltage, current, resistance, and power.
  - Overview of electronic components (resistors, capacitors, diodes, transistors).
- Day 3-4: Digital Electronics
  - Logic gates, combinational and sequential circuits.
  - Introduction to flip-flops, counters, and shift registers.
- Day 5: Hardware Interfacing Basics
  - GPIO (General Purpose Input/Output).
  - Interfacing LEDs, switches, and displays.

COURSE CURRICULUM:

Week 3: Programming Microcontrollers

- Day 1-2: Introduction to C Programming for Embedded Systems
  - Basics of C language, data types, operators, control structures.
- Day 3-4: Advanced C Programming
  - Functions, arrays, pointers, and structures.
- Day 5: Microcontroller Programming Basics
  - Writing and uploading basic programs (e.g., blinking LED).

COURSE CURRICULUM:

Week 4: Communication Protocols

- Day 1-2: Serial Communication
  - UART, SPI, I2C protocols.
  - Practical exercises with UART and SPI.
- Day 3-4: Wireless Communication
  - Overview of Bluetooth, Wi-Fi, Zigbee.
  - Hands-on with Bluetooth or Wi-Fi modules.
- Day 5: Project Day
  - Implement a basic communication project using learned protocols.

COURSE CURRICULUM:

Week 5: Real-Time Operating Systems (RTOS)

- Day 1-2: Introduction to RTOS
  - Concepts of real-time systems, task scheduling.
- Day 3-4: RTOS Programming
  - Using FreeRTOS or another RTOS.
  - Creating tasks, semaphores, and queues.
- Day 5: RTOS Project
  - Develop a small project using RTOS concepts.
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COURSE CURRICULUM:

Week 6: Sensors and Actuators

- Day 1-2: Introduction to Sensors
  - Types of sensors (temperature, pressure, motion).
  - Interfacing sensors with microcontrollers.
- Day 3-4: Introduction to Actuators
  - Types of actuators (motors, relays).
  - Controlling actuators with microcontrollers.
- Day 5: Sensor and Actuator Project
  - Build a project integrating sensors and actuators.

COURSE CURRICULUM:

Week 7: Advanced Topics

- Day 1-2: Low Power Design
  - Techniques for low power consumption.
  - Power management in embedded systems.
- Day 3-4: Internet of Things (IoT)
  - Basics of IoT, IoT protocols.
  - Connecting an embedded system to the cloud.
- Day 5: Security in Embedded Systems
  - Basics of embedded security.
  - Encryption and authentication techniques.

COURSE CURRICULUM:

Week 8: Final Project

- Day 1-4: Project Development
  - Students work on a comprehensive final project that integrates multiple aspects of the curriculum.
- Day 5: Project Presentation and Evaluation
  - Students present their projects.
  - Feedback and evaluation.

Our Partners Company's

FOR SUPPORT

+91 9652379012

www.techteachedsols.com

tech.ed.sols@gmail.com

THANK YOU

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