EMBEDDED SYLLABUS

Module 1: Introduction

- Overview of Embedded Systems
- Design Challenges
- Embedded Processor Technology
- Hardware Design
- Microcontroller Architecture
    - 8051
    - PIC
    - ARM

Module 2: I/O Interfacing Techniques

- Memory Interfacing
- Analog-to-Digital (A/D) Conversion
- Digital-to-Analog (D/A) Conversion
- Timers
- Watchdog Timer
- Counters
- Encoder & Decoder
- UART
- Sensors and Actuators Interfacing

Module 3: Architecture of Special Purpose Computing Systems

- ATM
- Handheld Devices
- Data Compressors
- Image Capturing Devices
- Architecture and Requirements
- Challenges and Constraints of Special Purpose Computing Systems

Module 4: Programming Tools

- Evolution of Embedded Programming Tools
- Modelling Programs
- Code Optimization
- Logic Analyzers
- Programming Environment

Module 5: Real-Time Operating Systems (RTOS)

- Classification of Real-Time Systems
- Issues and Challenges in RTOS
- Real-Time Scheduling Schemes
    - Earliest Deadline First (EDF)
    - Rate Monotonic Scheduling (RMS)
    - Hybrid Techniques
- eCOS
- POSIX
- Protothreads

Module 6: Embedded Networking Protocols

- Inter-Integrated Circuits (I2C)
- Controller Area Network (CAN)
- Embedded Ethernet Controller
- RS232
- Bluetooth
- Zigbee
- WiFi

Module 7: Applications of Embedded Systems

- Introduction to Embedded System Applications
- Role in Various Sectors
    - Agriculture
    - Automotive Electronics
    - Consumer Electronics
    - Industrial Controls
    - Medical Electronics