MICROPROCESSORS AND MICROCONTROLLERS SYLLABUS

Module 1: Overview of Microprocessors

- Introduction to Microprocessors
- 8-bit/16-bit Microprocessors
- Overview of Intel Pentium Series (i3, i5, i7)

Module 2: Microprocessor Architecture and Interfacing: Intel x86

- 16-bit Microprocessor: 8086 Architecture
- Addressing Modes
- Memory Segmentation
- Instruction Set
- Assembly Language Processing
- Programming with DOS and BIOS Function Calls
- Minimum and Maximum Mode Configuration
- Programmable Peripheral Interface (8255)
- Programmable Timer Controller (8254)
- Memory Interface to 8086

Module 3: Microcontroller Architecture: Intel 8051

- Microcontroller 8051 Organization and Architecture
- RAM-ROM Organization
- Machine Cycle
- Instruction Set: Addressing Modes
- Data Processing Stack
- Arithmetic, Logical Operations
- Branching: Unconditional and Conditional
- Assembly Programming

Module 4: Microcontroller 8051 Peripherals

- I/O Ports
- Timers and Counters
- Serial Communication
- Interrupts

Module 5: I/O Interfacing with Microcontroller 8051

- LCD
- LED
- Keypad
- Analog-to-Digital Converters
- Digital-to-Analog Converters
- Sensors with Signal Conditioning Interface

Module 6: ARM Processor Architecture

- ARM Design Philosophy
- Overview of ARM Architecture
- States: ARM, Thumb, Jazelle
- Registers and Modes
- Conditional Execution
- Pipelining
- Vector Tables
- Exception Handling

Module 7: ARM Instruction Set

- Data Processing Instructions
- Branch Instructions
- Load and Store Instructions
- SWI Instruction
- Loading Instructions
- Conditional Execution
- Assembly Programming