



MICROPROCESSORS AND INTERFACING

Course objectives:

- To introduce 8085 architecture and programming in assembly language.
- To introduce basic concepts of interfacing memory and peripheral devices to a microprocessor.
- To introduce serial and parallel bus standards.
- To introduce 8051 microcontroller.
- To introduce various advanced processor architectures such as 80X86, Pentium and Multi-core Processors.

UNIT-I

8085 Architecture: Introduction to microprocessors and microcontrollers,

8085 Processor Architecture, Internal operations, Instructions and timings,

Programming the 8085 – Introduction to 8085 instructions, addressing modes and Programming techniques with Additional instruction.

UNIT-II

Stacks and subroutines, interfacing peripherals - Basic interfacing concepts, interfacing output displays, interfacing input keyboards. Interrupts - 8085 Interrupts, Programmable Interrupt Controller (8259A). Direct Memory Access (DMA) – DMA Controller (Intel 8257), Interfacing 8085 with Digital to Analog and Analog to Digital converters.

UNIT-III

Programmable peripheral interface (Intel 8255A), Programmable communication interface (Intel 8251), Programmable Interval timer (Intel 8253 and 8254), Programmable Keyboard / Display controller (Intel 8279).Serial and parallel bus standards RS 232 C, IEEE 488.

UNIT-IV

Introduction to Microcontrollers, 8051 – Architecture – Instruction set, Addressing modes and Programming Techniques. Comparison of various families of 8-bit micro controllers. System Design

Techniques Interfacing of LCD, ADC, Sensors, Stepper motor, keyboard and DAC using microcontrollers Communication standards – serial RS232 and USB

UNIT-V

Microprocessor Applications and trends in microprocessor Technology – 8-bit, 16-bit and 32-bit microprocessors. Advanced Processor Architecture – Register structure, Instruction set, Addressing modes of 8086. Features of advanced microprocessors. 80386, 80486, Pentium and Multi-Core Processors.

Suggested Readings:

1. Ramesh S Gaonkar, Microprocessor architecture, Programming and applications with 8085, 5/E Prentice Hall, 2002.
2. Barry B. Brey, The Intel Microprocessor, 8086/8088, 8018/80188, 80286, 80386, 80486, Pentium and Pentium pro-processors – architecture, Programming and interfacing, 4 Edition, Prentice Hall 1993.
3. Kenneth Ayala “ The 8051 Microcontroller” West publishing company.
4. MykePredko, programming and customizing the 8051 Microcontroller, Tata McGraw-Hill, 1994.