

Course Code	Course Title					Core/Elective	
PC238EE	Microprocessors and Microcontrollers					Core	
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
-	3	-	-	-	30	70	3

Course Objectives

- To understand about 8085 microprocessor architecture, Instruction set and addressing modes.
- To know the use of interfacing devices and process of interfacing.
- To understand about 8051 microcontroller architecture, and programming.

Course Outcomes

After completing this course, the student will be able to:

1. Understand 8085 microprocessor architecture and its operation.
2. Write assembly language program for a given task.
3. Interface memory and I/O devices to 8085 using peripheral devices.
4. Understand uses of microcontrollers and their applications.
5. Write microcontroller programs and interface devices.

UNIT- I:Microprocessor Architecture: Microprocessors, Microcomputers, and Assembly Language, Architecture Details and its operation, Bus organization of 8085, Registers, Memory unit of 8085, Instruction decoding & execution, 8085-Based single board Microcomputer, Pin out Diagram of 8085, Bus timings, 8085 Interrupts (Hardware and Software), 8085 Vectored Interrupts. Introduction to Advanced Controllers, ARM, MSP controllers.

UNIT-II:8085 Programming: The 8085 Programming Model, Operand Types, Instruction Format, Addressing Modes, Instruction set, Writing and debugging simple assembly Language Programs, Delays.

UNIT-III:Interfacing: Memory and I/O interfacing, Programmable Peripheral Interface 8255 (PPI), Interfacing seven segment display, Interfacing matrix keyboard, A/D and D/A interfacing, Programmable Interval Timer (8253), Programmable Interrupt Controller (8259).

UNIT- IV:Microcontroller Architecture: Types of Microcontrollers, 8051 Microcontroller – Architecture, Memory organization, special function registers, pins and signals, timing and control, Ports and circuits, Counters and timers, Serial data input / output, Interrupts & timers.

UNIT-V

8051 Programming: The 8051-programming model, Operand Types, Instruction cycle, addressing modes, 8051 instruction set, Classification of instructions. Simple programs and I/O interfacing.

Suggested Readings:

1. Ramesh S. Gaonkar, *Microprocessor Architecture, Programming and Applications with the 8085*, Penram International Publishing, Fifth Edition, 2011.
2. Krishna Kant, *Microprocessors and Microcontrollers - Architecture, Programming and System Design 8085, 8086, 8051, 8096*, Prentice-Hall India - 2007.

3. Kenneth. J. Ayala, *The 8051 Microcontroller Architecture Programming and Applications*, Thomson publishers, 2nd Edition, 2007.
4. A.K. Ray and Bhurchandi, *Advanced Microprocessors and Peripherals*, Tata McGraw Hill,