Microprocessors and Microcontrollers

Course Code	19EE3602	**Year**	III	**Semester**	II
Course Category	Professional Core	**Branch**	EEE	**Course Type**	Theory
Credits	3	**L-T-P**	3-0-0	**Prerequisites**	Digital Systems
Continuous Internal Evaluation:	30	**Semester End Evaluation:**	70	**Total Marks:**	100

Course Outcomes	
Upon successful completion of the course, the student will be able to	
CO1	Have a clear understanding of the architecture and instruction set of 8086 and 8051.(L2)
CO2	Develop 8086 and 8051 assembly language programs to perform a given task.(L3)
CO3	Interface peripherals and memories with 8086 and 8051.(L4)
CO4	Design real-time application of Microprocessors and Microcontrollers.(L6)

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (H:High, M: Medium, L:Low)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3												1	
CO2	3	2		3	2								2	
CO3	3	3	2	2	3								3	
CO4	3	3	3	3	3								3	3

Syllabus

Unit No.	**Contents**	**Mapped CO**
I	**Intel8086** Introduction and evolution of Microprocessors, Architecture of 8086, Register Organization of 8086, Memory Organization of 8086, Pin diagram of 8086. Minimum and Maximum mode operations of 8086, General Bus Operation of 8086, Read and Write cycle timing diagram.	CO1
II	**ASSEMBLY LANGUAGE PROGRAMMING** Addressing Modes and Instruction set, Assembler Directives, Procedures and Macros, simple assembly language programming.	CO1, CO2
III	**Basic Peripherals and Interfacing** Static Memory interfacing with 8086, 8255 PPI, Architecture of 8255 PPI, Various modes of operations and interface of I/O devices to 8086 using 8255, Interfacing A/D, D/A Converter, Stepper motor interface. Programmable DMA Controller 8257, Programmable Interrupt Controller 8259, Serial Communication Interface USART 8251.	CO3, CO4
IV	**8051 Microcontrollers** Intel 8051 architecture, memory organization, flags, stack, and special function registers, I/O ports counters and timers, serial data I/O, interrupts. Addressing modes, instructions set, Simple assembly language Programming.	CO1, CO2
V	**Interfacing and Applications of 8051** Interfacing external memory, Interfacing 8051 to LED's, Relay's and Latch Connections, interfacing seven segment display, ADC and DAC interfacing, Stepper motor control.	CO3, CO4

Learning Resources

Text Books

1. Douglas V. Hall, "Microprocessors and Interfacing", TMH-Revised 2nd edition,2006.
2. A. K. Ray and K. M. Burchandi, "Advanced Microprocessors and interfacing", Tata McGraw Hill, 2nd edition, 2006.
3. Kenneth J. Ayala, "The 8051 Microcontroller Architecture, Programming and Applications", Thomson Publishers, 2nd Edition, 2004

Reference Books

1. Ajay V. Deshmukh, "Microcontrollers – Theory & Applications", Tata McGraw Hill, 2005.
2. M.A. Mazidi, R.D. McKinlay, J.G. Mazidi, "The 8051 Microcontroller: A Systems Approach", Pearson, 2013.
3. Kenneth J Ayala, "The 8086 Microprocessors Architecture, Programming and Interfacing the PC", West Publishers, 1995.

e- Resources & other digital material

1. **https://nptel.ac.in/courses/108/103/108103157/**
2. **https://nptel.ac.in/courses/108/107/108107029/ (Web Content)**
3. **https://nptel.ac.in/courses/108/105/108105102/**