

Course Code	Course Title	L	T	P	C
1153EC101	MICROPROCESSOR AND MICROCONTROLLER	3	0	0	3

a) Course Category

Allied Elective

b) Preamble

The Purpose of the course is to provide students with the Knowledge of Microprocessors and Microcontroller. To solve real world problems in an efficient manner, this course also emphasis on architecture and Programming.

c) Prerequisite

Nil

d) Related Courses

Robotics and Embedded System Design

e) Course Educational Objectives :

Students undergoing this course are exposed to:

- 1.The internal organization, addressing modes and instruction sets of 8085, 8086 processor.
- 2.The various peripheral devices such as 8255, 8279, 8251, 8253 and 8259 the various functional units of 8051 microcontroller.
- 3.Develop assembly language program by using 8051 Instruction sets and addressing modes.

f) Course Outcomes

Upon the successful completion of the course, students will be able to:

CO Nos.	Course Outcomes	Knowledge Level (Based on Revised Bloom's Taxonomy)
CO1	Explain the internal organization, addressing modes and instruction sets of 8085 processor.	K2
CO2	Explain the internal organization, addressing modes and instruction sets of 8086 processor.	K2
CO3	Explain the interfacing of various peripherals devices such as 8255, 8279, 8251, 8253 and 8259.	K2
CO4	Explain the architecture and functional block of 8051 microcontroller.	K2
CO5	Develop an embedded C and ALP in 8051 microcontroller using the internal functional blocks for the given	K2

	specification.	
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g)	Correlation of COs with POs													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	M	L	H	-	-	-	-	-	-	-	-	-	M	L
CO2	-	L	H	-	-	-	-	-	-	-	-	-	-	L
CO3	M	-	L	H	-	-	-	-	-	-	-	-	M	-
CO4	-	L	M	H	-	-	-	-	-	-	-	-	-	L
CO5	-	-	M	-	L	-	-	-	-	-	-	H	-	-

h) Course Content

UNIT I 8085 CPU 9

8085 Architecture – Pin diagram-Memory interfacing – I/O interfacing- Timing Diagram- Instruction Set- Addressing modes – Assembly language programming

UNIT II 8086 CPU 9

Intel 8086 microprocessor – Architecture – minimum and maximum mode- Instruction set and assembler directives – Addressing modes – Assembly language programming – Procedures – Macros

UNIT III PERIPHERAL DEVICES 9

Parallel peripheral Interface (8255) - Timer / Counter (8253) - Keyboard and Display Controller (8279) - USART (8251) - Interrupt Controller (8259).

UNIT IV 8051 ARCHITECTURE 9

Architecture – memory organization –I/O pins, ports and circuits- Timers - Interrupts –serial communication

UNIT V 8051 PROGRAMMING 9

Addressing modes -instruction set -Assembly language programming and C Programming– Timer Counter Programming – Serial Communication Programming- Interrupt Programming.

Total 45 Hrs

I) Learning Resources

Reference Books

1. Kenneth J Ayala, The 8051 Microcontroller Architecture Programming and Application, third Edition, Penram International Publishers
2. Mohamed Rafiquzzaman, Microprocessor and Microcomputer based system design, second edition, CRC press

Text Books

1. Ramesh S Gaonkar, Microprocessor Architecture, Programming and application with 8085, 6th Edition, Penram International Publishing .(UNIT 1)
2. Yu-cheng Liu, Glenn A. Gibson, "Microcomputer systems: The 8086 / 8088 Family architecture, Programming and Design "second edition, PHI .(UNIT2)
3. A.K Ray & K.M. Burchandi, Advanced Microprocessor and peripherals Architectures, Programming and interfacing ", TMH, (UNIT 3)
4. Muhammad Ali Mazidi, Janice GillispieMazidi and Rolin D McKinlay, The 8051 microcontroller and embedded systems using assembly and C, second edition Pearson education Asia.(UNIT 4 & 5)

Online Resources

1. <https://www.youtube.com/watch?v=liRPtvj7bFU&list=PL0E131A78ABFBFDD0>
2. <https://www.youtube.com/watch?v=95uGOJ1Ud2c&list=PLJGA4olwzpA-rvcdWULcRuMn2495g0n8j>