

<b>COURSE CODE</b>	<b>MICROPROCESSOR AND MICROCONTROLLER</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>1152ME128</b>		<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

### 1. 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, Programming and system design used in various day to day gadgets.

### 2. Pre requisite

Basic electronic engineering

### 3. Links to other courses

Mechatronics system

### 4. Course Educational Objectives

Students undergoing this course are expected to:

- Gain knowledge on the basic concepts of Microprocessor and Microcontroller.
- Understand the concept of embedded systems.

### 5. Course Outcomes

Upon the successful completion of the course, learners will be able to

<b>CO Nos</b>	<b>Course Outcomes</b>	<b>Level of learning domain (Based on revised Bloom's)</b>
CO1	Develop an ALP in 8085 microprocessor for the given problem statement	K2
CO2	Describe the architecture and functional block of 8051 microcontroller	K2
CO3	Write an embedded C and ALP for the internal components in 8051 microcontroller for the given design specification	K2
CO4	Describe various peripherals devices such as 8255, 8279, 8251, 8253,8259 and 8237	K2
CO5	Explain microcontroller application and basic architecture of PIC, ARM and ATMEGA processors.	K2

(K2-Understand)

### 6. Correlation of COs with Programme Outcomes:

<b>Cos</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>
CO1			L	M								M		
CO2			L	M								M		
CO3			L	M								M		
CO4			L	M								M		
CO5			L	M								M		

H- High; M-Medium; L-Low

### 7. Course Content

#### UNIT I: 8085 CPU

L - 9

8085 Architecture – Pin diagram-Memory interfacing – I/O interfacing- Timing Diagram- Instruction Set- Addressing modes – Assembly language programming- 8086 Architecture, comparison of 8 bit (8085) and 16 bit (8086)processors.

**UNIT II: 8051 Architecture****L - 9**

Architecture – memory organization –I/O ports and circuits-Timers - Interrupts –serial communication  
- Interfacing of External memory-Interfacing LCD & Keyboard-RTC.

**UNIT III: 8051 Programming****L - 9**

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

**UNIT IV: Peripheral Devices****L - 10**

Parallel peripheral Interface (8255) - Timer / Counter (8253) - Keyboard and Display Controller (8279)  
- USART (8251) - Interrupt Controller (8259)- DMA Controller (8237).

**UNIT V:Microcontroller Applications & Advanced Processor****L - 8**

Temperature control system- Motor speed control system – Traffic light System – Elevator system-  
Data Acquisitions system - Introduction to architecture of PIC, ARM, ATMEGA processors.

**Total: 45 Periods****8. Text Books**

1. Ramesh S Gaonkar, Microprocessor Architecture, Programming and application with 8085, 6<sup>th</sup> Edition, Penram International Publishing .
2. Muhammad Ali Mazidi, Janice GillispieMazidi and Rolin D McKinlay, The 8051 microcontroller and embedded systems using assembly and C, second edition Pearson education Asia.
3. Mohamed Rafiqzaman, Microprocessor and Microcomputer based system design, second edition, CRC press.

**9. References**

1. Kenneth J Ayala, The 8051 Microcontroller Architecture Programming and Application, third Edition, Penram International Publishers.
2. A.K Ray & K.M. Burchandi, Advanced Microprocessor and peripherals Architectures, Programming and interfacing “, second edition, Tata McGraw-Hill.

**10. Revised Bloom's based Assessment Pattern**

Revised Bloom's Category	Internal				University Examination (%)
	Unit Test 1 (%)	Mid Term Test 1 (%)	Unit Test 2 (%)	Mid Term Test 2 (%)	
Remember	20	20	20	20	20
Understand	30	30	20	30	30
Apply	50	50	60	50	50
Analyse					
Evaluate					
Create					

Revised Bloom's Category	Assignments	
	1 (CO1 &CO2) (max marks in %)	2 (CO3&CO4) (max marks in %)