

COURSE CODE: 1151EE113	COURSE TITLE: MICROPROCESSOR AND MICROCONTROLLER	L 3	T 2	P 0	C 4
COURSE CATEGORY:					
Program Core					
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.					
PRE-REQUISITE COURSES:					
Digital Electronics					
RELATED COURSES:					
Embedded OS and Device Drivers, Embedded System Design, Embedded Processors					
COURSE EDUCATIONAL OBJECTIVES :					
The objectives of the course are to make the students, <ul style="list-style-type: none"> • Know the internal organization, addressing modes and instruction sets of 8085 processor. • Know the various functional units of 8051 microcontroller. • Understand embedded C and assembly language program by using 8051 Instruction sets and addressing modes. • Know the various peripheral devices such as 8255, 8279, 8251, 8253, 8259 and 8237. • Understand microcontroller based system design for various applications. 					
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	Develop an ALP in 8085 microprocessor using the internal organization for the given specification	K3			
CO2	Describe the architecture and functional block of 8051 microcontroller	K2			
CO3	Develop an embedded C and ALP in 8051 microcontroller using the internal functional blocks for the given specification	K3			
CO4	Explain 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			

CORRELATION OF COs AND POs

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	L	H									
CO2		L	H									
CO3		M			L							H
CO4	M		L	H								
CO5		L	M									

COURSE CONTENT:

UNIT I	8085 CPU	9+3
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8085 Architecture – Pin diagram-Memory interfacing – I/O interfacing- Timing Diagram- Instruction Set- Addressing modes – Assembly language programming- comparison of 8 bit (8085) and 16 bit (8086) processors.

UNIT II	8051 ARCHITECTURE	9+3
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Architecture – memory organization –I/O ports and circuits-Timers - Interrupts –serial communication - Interfacing of External memory-Interfacing LCD & Keyboard-RTC.

UNIT III	8051 PROGRAMMING	9+3
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Addressing modes -instruction set -Assembly language programming and C Programming– Timer Counter Programming – Serial Communication Programming- Interrupt Programming.

UNIT IV	PERIPHERAL DEVICES	10+3
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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	8+3
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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+ 15(Tutorials) = 60 PERIODS

TEXT BOOKS:

1. Ramesh S Gaonkar, Microprocessor Architecture, Programming and application with 8085, 6th Edition, Penram International Publishing .(UNIT 1&4)
2. Muhammad Ali Mazidi , Janice Gillispie Mazidi and Rolin D McKinlay, The 8051 microcontroller and embedded systems using assembly and C, second edition Pearson education Asia.(UNIT 2 & 3)
3. Mohamed Rafiquzzaman, Microprocessor and Microcomputer based system design, second edition, CRC press(UNIT 5)

REFERENCE BOOKS:

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 .

