

MICROPROCESSORS AND MICROCONTROLLERS

Course Code	23EE3602	Year	III	Semester	II
Course Category	Professional Core	Branch	EEE	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	DC, CAO
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	Demonstrate the basic concepts & operations of Microprocessor, Microcontroller and PIC. (L2)
CO2	Illustrate the instruction sets & addressing modes of Microprocessor and Microcontroller. (L3)
CO3	Analyse the interfacing capability of Microprocessor and Microcontroller. (L4)
CO4	Analyse the programming of PIC micro controller in C. (L4)
CO5	Ability to understand the basic concepts, instruction sets, interfacing capability of 8086, 8051, PIC and submit a report.

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:High, 2: Medium, 1:Low)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1														
CO2	3											2	3	
CO3		3			2							2	3	2
CO4		3			2							2	3	2
CO5									3	3	1			

SYLLABUS		
Unit No.	Contents	Mapped CO
I	Introduction to Microprocessor Architecture Introduction and evolution of Microprocessors – Architecture of 8086 – Memory Organization of 8086 – Register Organization of 8086– Introduction to 80286 - 80386 - 80486 and Pentium (brief description about architectural advancements only).	CO1 CO5
II	Minimum and Maximum Mode Operations Instruction sets of 8086 - Addressing modes – Assembler directives – Simple Programs-General bus operation of 8086 – Minimum and Maximum mode operations of 8086 – 8086 Control signal interfacing – Read and write cycle timing diagrams.	CO2 CO5

III	Microprocessors I/O interfacing 8255 PPI– Architecture of 8255–Modes of operation– Interfacing I/O devices to 8086 using 8255–Interfacing A to D converters– Interfacing D to A converters– Stepper motor interfacing– Static memory interfacing with 8086 – Architecture and interfacing of DMA controller (8257).	CO3 CO5
IV	8051 Microcontroller Overview of 8051 Microcontroller – Architecture– Memory Organization – Register set – Instruction set – Simple Programs - I/O ports and Interrupts – Timers and Counters – Serial Communication – Interfacing of peripherals.	CO1 CO2 CO3 CO5
V	PIC Architecture Block diagram of basic PIC 18 micro controller – registers I/O ports – Programming in C for PIC: Data types - I/O programming - logical operations - data conversion.	CO1 CO4 CO5

Learning Resources	
Text Books:	
1. Ray and Burchandi, “Advanced Microprocessors and Interfacing”, Tata McGraw–Hill, 3rd edition, 2006. 2. Kenneth J Ayala, “The 8051 Microcontroller Architecture- Programming and Applications”, Thomson Publishers, 2nd Edition, 2004. 3. Muhammad Ali Mazidi, Rolind D. Mckinay, Danny causey, “PIC Microcontroller and Embedded Systems using Assembly and C for PIC 18”, Pearson Publisher, 19th Impression, 2015.	
Reference Books:	
1. Microprocessors and Interfacing, “Douglas V Hal”, Mc–Graw Hill, 2nd Edition, 2006. 2. R.S. Kaler, “A Text book of Microprocessors and Micro Controllers”, I.K. International Publishing House Pvt. Ltd, 2013. 3. Ajay V. Deshmukh, “Microcontrollers – Theory and Applications”, Tata McGrawHill Companies, 2005. 4. Ajit Pal, “Microcontrollers – Principles and Applications”, PHI Learning Pvt Ltd, 2011.	
E-Resources:	
1. https://archive.nptel.ac.in/courses/108/105/108105102 2. https://archive.nptel.ac.in/courses/108/103/108103157 3. https://nptel.ac.in/courses/106108100	