

MICROPROCESSORS AND MICROCONTROLLERS LAB

Course Code	23EE3652	Year	III	Semester	II
Course Category	Professional Core	Branch	EEE	Course Type	Lab
Credits	1.5	L-T-P	0-0-3	Prerequisites	MPMC
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	Apply 8086 microprocessor assembly language program on arithmetic - logical number systems and shift operations. (L3)
CO2	Implement assembly language programs for numeric operations, array handling and string operations problems. (L3)
CO3	Analyse the Interfacing of 8086 with I/O and other devices.(L4)
CO4	Develop parallel and serial communication using 8051. (L4)
CO5	Conduct experiments as a team / individual by using equipment available in the laboratory and make an effective report based on experiments.

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	3			3	3							2	3	2
C02	3			3	3							2	3	2
CO3		3		3	3							2	3	3
CO4		3		3	3							2	3	3
C05									3	3	3	2		

Any 10 of the following experiments are to be conducted:

SYLLABUS		
Exp. No.	Contents	Mapped CO
8086 Microprocessor Programs		
1	Arithmetic operations – Two 16-bit numbers and multibyte numbers: addition - subtraction - multiplication and division – Signed and unsigned arithmetic operations - ASCII – Arithmetic operations.	CO1 CO5
2	Logic operations – Shift and rotate – Converting packed BCD to unpacked BCD - BCD to ASCII conversion – BCD numbers addition.	CO1 CO5
3	Arrange the given array in ascending and descending order	CO2 CO5
4	Determine the factorial of a given number	CO2 CO5
5	By using string operation and Instruction prefix: Move block - Reverse string Sorting - Inserting - Deleting - Length of the string - String comparison.	CO2 CO5

6	Find the first and n^{th} number of 'n' natural numbers of a Fibonacci series.	CO2 CO5
7	Find the number and sum of even and odd numbers of a given array	CO2 CO5
8	Find the sum of 'n' natural numbers and squares of 'n' natural numbers	CO2 CO5
9	Arithmetic operations on 8051	CO1 CO5
10	Conversion of decimal number to hexa equivalent and hexa equivalent to decimal number	CO1 CO5
11	Find the Sum of elements in an array and also identify the largest & smallest number of a given array using 8051	CO2 CO5
Programs on Interfacing		
12	Interfacing 8255–PPI with 8086.	CO3 CO5
13	Stepper motor control using 8253/8255.	CO3 CO5
14	Reading and Writing on a parallel port using 8051	CO4 CO5
15	Timer in different modes using 8051	CO4 CO5
16	Serial communication implementation using 8051	CO4 CO5
17	Understanding three memory areas of 00 – FF Using 8051 external interrupts.	CO4 CO5
18	Traffic Light Controller using 8051.	CO3 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.	