

Subject Code: 1ET4000305	Subject Title: MICROPROCESSOR
Pre-Requisite	-

RATIONALE:

The microprocessor is challenging and very dynamic field. This course explores architecture of a microprocessor and its programming in assembly language. The student will be able to apply logics to various given problems and develop programs using assembly language construct that would help them to develop real time microprocessor based application programs.

COURSE OBJECTIVE:

This course introduces to Engineering Graduates the Microprocessor and its Assembly Language programming. The course is designed based on the popular Intel 8086 microprocessor and provides good understanding of the microprocessor operation at the address, data, and control level. The course also covers the software part through teaching of assembly language programming techniques. Microprocessor Interface hardware and support chips are also examined in detail.

TEACHING AND EVALUATION SCHEME:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)			
Lecture	Tutorial	Practical	Credit	Theory		Practical	
				University Assessment	Continuous Assessment	University Assessment	Continuous assessment
3	-	2	5	60	40	20	30

DETAILS OF COURSE CONTENTS:

Sr. NO.	TOPIC	Total Hrs.	WEIGHTAGE
1	Introduction of Microprocessor 1.1 Evolution of microprocessor and it's types 1.2 Microprocessor Bus organization : Data Bus, Address Bus and Control Bus 1.3 Operations of microprocessor: internal data manipulation, microprocessor initiated and peripheral or external initiated 1.4 Pin diagram and block diagram of 8085 1.5 Architecture of 8085 1.6 Internal registers organization of 8085 1.7 Limitations of 8085	6	20%
2	Instruction Cycle and Timing Diagram 2.1 8085 machine cycle and bus timings to fetch, decode and execute instruction from memory	4	10%

	2.2 Memory read and write 2.3 Input/output read and write cycle with timing diagram		
3	8085 Instruction set 3.1 Machine language instruction format : Single byte, two byte, three byte instructions 3.2 Various addressing modes 3.3 Data transfer operation and instruction 3.4 Arithmetic operation and instruction 3.5 Logical operation and instruction 3.6 Branch operation and instruction 3.7 Stack operation and instruction 3.8 Input/output and machine control operation and instruction 3.9 Simple programs with 8085 instruction	12	20%
4	Programming Techniques of 8085 4.1 Looping, Counting and indexing 4.2 Counter and Timing delays 4.3 Stack and subroutine basic concepts 4.4 Procedure and macro	8	20%
5	8085 Interrupts 5.1 Interrupts and its need 5.2 classification of interrupts 5.3 8085 interrupts: software, hard ware, and priorities of interrupts 5.4 8085 vectored interrupts:TRAP,INTR 5.5 RST 7.5, RST 6.5, RST 5.5	4	10%
6	Introduction to Advanced Microprocessor 6.1 Block diagram - Architecture of 8086 6.2 Register organization of 8086 6.3 Concepts of Instruction pipelining 6.4 Memory segmentation 6.5 Memory address generation 6.6 Minimum and Maximum mode operation and diagram	8	20%

COURSE OUTCOME:

At end of the course, students will be able to:

- Describe the general architecture of a microcomputer system and architecture & organization of 8085 & 8086 Microprocessor and understand the difference between 8085 and advanced microprocessor.
- Understand and realize the Interfacing of memory & various I/O devices with 8085 Microprocessor.
- Understand and classify the instruction set of 8085 microprocessor and distinguish the use of different instructions and apply it in assembly language programming.
- Understand the architecture and operation of Programmable Interface Devices and realize the programming & interfacing of it with 8085 microprocessor.

LIST OF PRACTICAL:

SR. No.	Experiment
1	Demonstrate of kit/simulator of 8085
2	Implement program to perform arithmetic operations (Add, subtract, multiply and divide) on signed and unsigned two 8 bit numbers.
3	Implement a program to mask the lower four bits of content of the memory location.
4	Implement a program to set higher four bits of content of the memory location to 1.
5	Implement a program to perform Exclusive OR of two numbers.
6	Implement a program to exchange the content of two memory locations.
7	Implement program to add/subtract 16 bit numbers.
8	Implement program to copy content of one memory location to another memory location.
9	Implement a program to check whether given no is odd or even.
10	Implement a program to compare two numbers.
11	Implement a program to sum integers from 0 to 9.
12	Implement a program to count no of zero value in given block of data.
13	Implement program to add an array of data.
14	Implement program to find the smallest and the largest number from an array of n number
15	Implement a program to move/copy block of memory to another given location and length of block is given in specific memory location.
16	Implement a program to calculate the length of a string given starting and ending location.
17	Implement a program to reverse a string using stack operations and stored in same memory area.
18	Implement a program to find minimum and maximum from block data using subroutine provided length of block stored at memory location.
19	Implement program to count no of negative values in given block of data.

LIST OF REFERENCES:

Sr.no.	Title	Author
1	8085 Microprocessor and its application	Kani, A. Nagoor (Mc Graw Hill)
2	Microprocessor & Interfacing Programming and hardware Revised second edition	Hall, Douglas (Tata Mc Graw Hill)
3	Microprocessor Architecture, Programming,	Gaonkar,Ramesh

	and Application with the 8085 (5th edition)	
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