

Kadi Sarva Vishwavidyalaya Faculty of Engineering & Technology Second Year Bachelor of EC Engineering

#### Subject Code: EC405-N Subject Title: MICROPROCESSOR AND INTERFACING

#### **Course Objective:**

- To understand the basics and evolution of microprocessors.
- To study about the functional components and Pin Configuration of 8085 in details.
- To study the various types of instructions provided by 8085 and it's addressing Modes.
- To Study concepts of Interfacing Module like 8255, 8279, 8237, 8253/54, 8251 and 8259.
- To Study features of advance microprocessor like 8086, 8088, 80186, 80286, 80386 and 80486 and SUN SPARC Microprocessors.

Teaching scheme				Total	Total Evaluation Scheme					
L	Т	Р	Total	Credit	Theory		IE	CIA	Pract.	Total
Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	Marks
03	00	02	05	04	03	70	30	20	30	150

### **Teaching Scheme (Credits and Hours)**

#### **Outline of the Course:**

Sr. No	Title of the Unit	Hours
1.	Introduction to 8085 Microprocessor	02
2.	Introduction about 8085 Microprocessor Architecture	12
3.	Introduction to 8085 Instruction Sets	06
4.	Programming of 8085 microprocessor	10
5.	Interfacing of Peripheral chips with 8085 microprocessor	10
6.	Introduction to advance Microprocessor	08
		48

Total hours (Theory): 48 Total hours (Tutorial): 32 Total hours: 80



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# **Detailed Syllabus:**

Unit	Topics	Lectures	Weight
No		(Hours)	age
1.	<b>Introduction to 8085 Microprocessor</b> : Introduction to microprocessor, Functional Component of microprocessor,		
	Evolution of Microprocessor, Microprocessor systems with bus organization, Microprocessor Architecture & Operations, Memory, I/O Device. I/O Operations.	02	05
2.	<b>Introduction about 8085 Microprocessor Architecture:</b> 8085 Microprocessor Architecture, Address, Data And Control Buses, Properties of 8085 microprocessor, Pin Functions of 8085 microprocessor, Demultiplexing Of Buses, Generation Of Control Signals, Addressing Modes, Instruction Cycle, Machine Cycles, T-States, Memory Interfacing.	12	20
3.	<b>Introduction to 8085 Instruction Sets:</b> Data Transfer (Copy) Operations, Arithmetic Operations, Logic Operations, Branch Operations; Programming Techniques with Additional Instructions Programming Techniques- Looping, Counting, & Indexing, Additional Data Transfer and 16-Bit Arithmetic Instructions, Arithmetic Operations Related to Memory, Logic Operations- Rotate, Counters & Time Delays , Stack & Subroutines, Conditional Call & Return Instructions.	06	10
4.	<b>Programming of 8085 microprocessor:</b> 16 bit Addition and Subtraction, 8 bit multiplication, 8 bit Division, Find Largest and Smallest numbers form Arrays, Arrange data in Ascending and Descending order, Conversion like BCD to HEX, Hex to BCD, HEX to ASCII, Square of given Number Using Lookup Table.	10	20
5.	<b>Interfacing of Peripheral chips with 8085 microprocessor:</b> Interfacing Concepts, Ports, Interfacing Of I/O Devices, Interrupts In 8085, Interfacing of Data Converters (D-To-A And A-To-D), Programmable Interfacing Devices Like 8279 Keyboard/Display Interface, 8255A PPI, 8253/8254 Timer, 8259A PIT, 8237 DMA Controller, Serial I/O Concepts, SID And SOD, 8251A USART. Interfacing of above chips With 8085, Programming them In Deferent Modes, Practical Applications.	10	25
6.	Introduction to advance Microprocessor: Intel 8086 Microprocessor architecture, Addressing Modes, 8086 pin configuration & function of each pin. Introduction and advance features of 8088, 80186, 80286, 80386, 80486 & Sun SPARC microprocessor.	08	20
	Total	48	100%



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Instructional Method and Pedagogy (Continuous Internal Assessment (CIA) Scheme)

- At the start of course, the course delivery pattern , prerequisite of the subject will be discussed
- Lecture may be conducted with the aid of multi-media projector, black board, OHP etc. & equal weight age should be given to all topics while teaching and conduction of all examinations.
- Attendance is compulsory in lectures and laboratory, which may carries five marks in overall evaluation.
- One/Two internal exams may be conducted and total/average/best of the same may be converted to equivalent of 30 marks as a part of internal theory evaluation.
- Assignment based on course content will be given to the student for each unit/topic and will be evaluated at regular interval. It may carry an importance of ten marks in the overall internal evaluation.
- Surprise tests/Quizzes/Seminar/Tutorial may be conducted and having share of five marks in the overall internal evaluation.

#### **Learning Outcomes:**

- The student can learn about detailed aspects of 8085 microprocessor of all the areas in day today life. Can also learn about instruction, Programming and different interfacing module using 8085 microprocessor.
- Also Student learns basic fundamentals and features of advance microprocessors.

#### **TEXT BOOKS:**

• Microprocessor Architecture, Programming, and Applications with the 8085 -Ramesh S. Gaonkar Pub: Penram International.

#### **REFERENCE BOOKS:**

- Microcomputers and Microprocessors: The 8080, 8085 and Z-80 Programming, Interfacing and Troubleshooting by John E. Uffenbeck.
- Microprocessors and Interfacing By Douglas V Hall Revised Second Edition, McGraw Hill Publication
- Microprocessor and Microcontroller fundamentals. The 8085 and 8051 Hardware and Software by William Kleitz.



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### LIST OF EXPERIMENTS

Sr.	Experiment Title
No.	
1	To introduction about 2025 microprocessor trainer leit
1.	To introduction about 8085 interoprocessor trainer kit.
2.	To perform addition/subtraction multiplication and division of two number using
	8085.
3.	To find largest and smallest numbers in the array of data using 8085.
4	To write a program to convert hey to ASCII and vice versa
	To write a program to convert nex to Albert and vice versa.
5.	To write a program to convert hex to BCD and vice versa.
6.	To write a program to arrange an array of data in ascending and descending order.
7.	To write a program to find square of given number using look up table technique.
8.	To write a program to transfer 10 bytes of data from 2050h memory location to
	3050h memory location.
0	
9.	10 write a program for traffic light controller using 8085 microprocessor.
10.	Write a program to read the DIP switches and display the reading port B at port A
	and from port CL at port CU.
11.	Write a program to generate a pulse every $50\mu s$ from counter 0.
12	To study and demonstrate seven segment interfacing with 8085 microprocessor
140	To study and demonstrate seven segment interfacing with 6005 interoprocessor.
13.	Write a program to generate a letter 'v' on led matrix.
14	
14.	write a program to rotate dc motor forward and backward with 8085
	microprocessor.