



CVM
UNIVERSITY

(Established under Gujarat Private Universities
(Second Amendment) Act : 2019 Gujarat Act No. 20 of 2019)

FACULTY OF ENGINEERING & TECHNOLOGY

Third Year Bachelor of Engineering

Course Code: 102045610

Course Title: Microprocessor Technologies

Type of Course: Professional Core Course/Professional Elective Course

Course Objectives: This course provides the fundamental knowledge of the various aspects of microprocessor based systems and enables students to understand the basic concepts of 8085 based computing systems. The subject introduces memory and input output peripherals interfacing with 8085 based system. The course is mainly focuses on designing motherboard type systems which consists of various peripherals along with microprocessor.

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
Lecture	Tutorial	Practical		Internal		External		Total
				Theory	J/V/P*	Theory	J/V/P*	
3	0	2	4	40 / 14	20 / 07	60/ 21	30/10	150 / 52

* J: Jury; V: Viva; P: Practical

Detailed Syllabus:

Sr.	Contents	Hours
1	Introduction to Microprocessor Based System: History of microprocessors, Architecture of 8085 microprocessor, pin details and functional block diagram of 8085 microprocessor, 8085 programming model, Address, data and control buses, demultiplexing of buses, generation of control signals, concept of instruction cycle, machine cycle and T state.	8
2	Memory and I/O Interfacing: Various types of memories, review of logic devices for interfacing, RAM and ROM interfacing with 8085 based systems, Interfacing input and output devices, memory mapped I/O	7
3	Instruction Set and Assembly Language Programming: Classification of instructions, Addressing Modes, 8085 Instruction Set, Instruction And Data Formats, Writing 8085 assembly language programs with decision, making and looping using data transfer, arithmetic, logical and branch instructions, timing diagram of instructions	8

4	Programming Techniques: Stack and subroutines, developing timers and time delay routines, code conversion, BCD arithmetic operations, 16 bit data operations	7
5	Interfacing Peripherals and Applications: Concepts of Interrupts and interrupt programming, vector interrupts and restart instructions, interfacing of programmable peripheral interface (8255), interfacing of data converters	8
6	Advanced Microprocessors: 8086 logical block diagram, segmentation, Minimum and maximum mode, 80286/80386/80486: Overview and architecture, Basic overview of Pentium and Multicore Processors	7

Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):

Distribution of Theory Marks						R: Remembering; U: Understanding; A: Application, N: Analyze; E: Evaluate; C: Create
R	U	A	N	E	C	
15%	25%	25%	15%	20%	---	

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

1	Ramesh S. Gaonkar, "Microprocessor Architecture, Programming, and Applications with the 8085", 5 th Edition, Penram International
2	Douglas Hall, "Microprocessors and Interfacing", 3 rd Edition, McGraw Hill Education
3	Shridhar and Ghosh, "0000 to 8085: Introduction to Microprocessors for Engineers and Scientists", 2 nd Edition, Prentice Hall India
4	Barry B. Brey, "The Intel Microprocessors", 8 th Edition, Pearson Education India

Course Outcomes (CO):

Sr.	Course Outcome Statements	% Weightage
CO-1	Demonstration of various features of microprocessor based systems	15
CO-2	Identification of architectural features of microprocessors including registers, ALU, Buses, Pin details	25
CO-3	Developing assembly language programs based on various instruction set of microprocessors	20
CO-4	Design on microcomputer based system using interfacing of memory and input output peripherals	25
CO-5	Demonstration of advance microprocessor based systems	15

List of Practicals / Tutorials:

Practical list may be changed based on content of the subjects and hardware and software facilities available in the institute and all the instruction and concept of interfacing should be covered.

1	(a) Introduction to Kit and simulator. (b) Demonstration of a simple program.
2	(a) Write a program to add two 16 bit numbers (b) Write a program to subtract two 16 bit numbers
3	(a) Write a program to Find two's complement of number and store the answer in memory (b) Write a program to Calculate the sum of series of numbers.
4	(a) Write a program to multiply two 8 bit numbers. (b) Write a program to divide two 8 bit no and obtain quotient and remainder.
5	(a) Write a program to Arrange the array in ascending order. (b) Write a program to count number of zero, positive and negative numbers from an array.
6	(a) Write a program to find the maximum and minimum number from given numbers. (b) Write a program to Count Number of one's and zero's in a number.
7	(a) Write a program to generate Fibonacci number. (b) Write a program to transfer 16 bytes of data stored at one location to another location
8	(a) Write a program to Generate and display BCD up counter with frequency 1 Hz. (b) Write a program to Generate and display the content of decimal counter.
9	(a) Write a program to convert BCD into equivalent Binary. (b) Write a program to convert BCD into 7 segment code.
10	(a) Write a program for to transfer content from Port B to Port A using 8255. (b) Write a program to generate different lighting pattern connected on Port A using appropriate delay.



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Supplementary Learning Material:

- 1 Open source simulator of 8085
- 2 NPTEL and SWAYAM portal
- 3 Courses of Microprocessors on Coursera Platform
- 4 www.intel.com

Curriculum Revision:

Version:	1
Drafted on (Month-Year):	Apr-22
Last Reviewed on (Month-Year):	
Next Review on (Month-Year):	