Academic Council

Item No:_____

Devrukh Shikshan Prasarak Mandal's

Nya. TATYASAHEB ATHALYE ARTS, Ved. S.R. SAPRE COMMERCE & Vid. DADASAHEB PITRE SCIENCE COLLEGE, DEVRUKH [AUTONOMOUS]

Syllabus for Sem – V & VI Program: B.Sc.

Course: Applied Component

Computer Science

Credit Based Semester and Grading System with the Effect from
Academic Year 2021-22

SEMESTER V
Theory

USACCS501	Microprocessor programming and interfacing		**No of Credits**	**Lectures / Week**
Units	**I**	Introduction to Microprocessor 8085	**2**	**4**
	II	8085 Microprocessor Microcontroller Assembly Language		
	III	8085 Microprocessor Interfacing I		
	IV	8085 Microprocessor Interfacing II		

Practicals

USACCS5P1	8085 Microprocessors	**2**	**4**

Objectives

The objective of this paper is to introduce the students the inner working of a computing system with hands-on experience in assembly language and connecting and controlling devices with microprocessor/ controller.

Expected learning outcomes

Upon the completion of this course the student will learn the following:-

- Working of a basic computing system.
- Anticipate the use of microprocessors/controllers in various areas
- Assembly language programming for 8085 and 8051.
- Interfacing & software control of basic hardware like switches, LEDs etc

Semester – V

Unit - 1 **-15 lectures**

Chapter 1 - 8 lectures

Logic devices for interfacing – tristate buffers, latches, encoders, decoders, concept of ADC and DAC.

Block diagram of a general microprocessor-based system, historical perspective on processors, concepts like memory, data and address buses, fetch-decode-execute, machine, assembly and high-level languages.

Ref:- RSG – Ch. 1

Chapter 2 -7 lectures

8085 Internal Block diagram and programming model, Bus organization, Memory organization, Pin signals.

Ref:- RSG– Ch. 2,3

Unit - 2 **-15 lectures**

Chapter 1 - Basic Definitions: 2 lectures

Instruction, opcode, operand, concept of binary instruction format, clock cycle, machine cycle, instruction cycle, addressing modes.

Ref - RSG – Ch - 5

Chapter 2 - 8085 Instruction Set 7 lectures

Data transfer, Arithmetic, Logical, Branch and Machine Control Instructions, Flowcharting basics and exercises, writing and executing an assembly language program, timing diagrams of machine cycles.

Ref - RSG – Ch - 6

Chapter 3 – Assembly Language Programming 5 lectures

Data copy and exchanging registers, 8-bit addition/subtraction, hex-bcd interconversions, largest/ smallest, multiplication/division with 8- and 16-bit results.

Ref - RSG – Ch - 6

Unit – 3 **-15 lectures**

Chapter 1 - Advanced Concepts

Stack - Concept, use and initialization of SP, POP and PUSH.

Subroutines – Concept, working, stack involvement, unconditional and conditional call and return instructions.

Interrupts – working of interrupts and ISRs. Example programs

Ref - RSG – Ch – 9, 12

Chapter - 2 – Basic Interfacing

Concept of a programmable interfacing device, 8255 PPI block diagram, Mode 0, BSR mode, interfacing switches, LEDs etc using 8255.

Ref - RSG – Ch - 15

Unit – 4 **-15 lectures**

Chapter 1 – Additional Programs

Block copy, largest/smallest in array, searching /sorting an array, lookup table, delay generation, use of subroutines, ISRs.

Ref - RSG – Ch - 7

Chapter 2 – Additional Interfacing

Interfacing seven segment display, keyboard, LCD etc.

Ref - RSG – Ch - 13

References:-

RG: Ramesh Gaonkar "Microprocessor Architecture Programming and Applications with the 8085" (RG) 5th edition Penram.

Microprocessor and Applications by Vibhute, Borole, Techmax Publications

Practicals

Use of 8085 kit – Demo

Assembly language programming for 8085

- Simple programs without branching
- Programs using branching
- Delay generation

Interfacing

- Programming the 8255 for reading switches and controlling LEDs
- Keyboard interfacing
- LCD interfacing