



Syllabus B. Tech
DEPARTMENT OF COMPUTER ENGINEERING
(with effect from 2025-26)

Course Title	: MICROPROCESSOR THEORY & APPLICATIONS
Course Number	: COC3092
Credits	: 3
Course Category	: PC
Pre-requisite(s)	: COC2072, COC2082
Contact Hours (L-T-P)	: 3-0-0
Type of Course	: Theory

Course Outcome

Upon successful completion of this course, students should be able to:

1. Understand the instruction set architecture of 8085 microprocessor, machine cycles, and address decoding for memory and I/O interface.
2. Understand instruction set architecture of x86 microprocessor.
3. Write and analyze assembly language programs in 8085 and x86 processors.
4. Learn the concept of procedures, interrupt, and interrupt service routine.
5. Explain Input and output modes and interfacing.

Syllabus

UNIT 1 INTRODUCTION TO 8085 MICROPROCESSOR

Introduction to microprocessor, microcomputer and assembly language, 8085 microprocessor architecture, 8085 based microcomputer, overview of 8085 instruction set, addressing modes. 8085 assembly language programming.

UNIT II BUS TIMINGS AND INTERFACING

8085 machine cycles and bus timings. Timing Diagrams of Opcode Fetch, Memory read/write machine cycle etc. Address decoding to interface memory and I/O. Memory mapped I/O and I/O mapped I/O.

UNIT III x86 ARCHITECTURE AND PROGRAMMING

Overview of x86 microprocessor family. Internal architecture of x86-64, addressing modes, instruction set, assembler directives, assembly language programming of x86 processors (analysis and coding), procedures and macros.

UNIT IV INTERRUPTS AND PERIPHERAL INTERFACING

Interrupts, Interrupt service routines, interfacing peripheral devices with microprocessor. Introduction to 8253/8254 Programmable Timer/Counter, 8259 Priority Interrupt Controller, 8255 Programmable Peripheral Interface, and other peripheral devices.

References

1. **R.L Gaonkar- "Microprocessor Architecture, Programming and Applications", Penram International Publishing India Pvt Ltd, 5th edition. (Text Book)**
2. **Doughlas V. Hall and SSSP Rao "Microprocessors and Interfacing- programming and hardware", McGraw Hill Education, 3rd edition. (Text Book)**