



CS-13: COMPUTER ORGANIZATION AND ARCHITECTURE		
Objectives: <ul style="list-style-type: none"> • Understand how logic circuits and boolean algebra forms as the basics of digital computer. • Demonstrate the building up of Sequential and Combinational logic from basic gates 		
Prerequisites: <ul style="list-style-type: none"> • General Knowledge of Computer 		
Unit No.	Topic	Detail
1	Digital Logic Circuits	<ul style="list-style-type: none"> • Logic Gates <ul style="list-style-type: none"> ▪ AND,OR,NOT,NAND,NOR,XOR, Exclusive NOR gates • Boolean Algebra <ul style="list-style-type: none"> ▪ Boolean algebra? ▪ Boolean variable and Boolean function (Analog and Digital Signals) ▪ Truth table ▪ Postulates ▪ Theorem related to postulates ▪ Simplified Boolean function using postulates and draw logical diagram of simplified function ▪ Simplified Boolean function using Karnaugh map method with DON'T CARE condition • Sequential And Combinational Circuits <ul style="list-style-type: none"> ▪ Clock pulses ▪ Combinational circuit, sequential circuit and adder • Flip Flops <ul style="list-style-type: none"> ▪ SR, Clocked SR, D, JK, JK – Master Slave, T • Universal Gate
2	Central Processing Unit	<ul style="list-style-type: none"> • Introduction Of CPU • Major component of CPU • General Register Organization <ul style="list-style-type: none"> ▪ control word ▪ Accumulator Register • Stack Organization <ul style="list-style-type: none"> ▪ Register stack ▪ Memory stack ▪ Polish notation and reverse polish notation

B.C.A. (Honours) & B.C.A. (Honours with Research)
(Semester - 1 and Semester - 2)
Saurashtra University
To be effective from June – 2023



		<ul style="list-style-type: none"> • Arithmetic And Logic Unit <ul style="list-style-type: none"> ▪ Block diagram of ALU • Interrupts
3	Input-Output Organization	<ul style="list-style-type: none"> • Memory buses • Block diagram and function • Data Bus, Address Bus and Control lines • Input Output Buses • Concept of input output interface • Input Out Processor (IOP) • Direct Memory Access • DMA controller

Student seminar - 5 Lectures

Expert Talk - 5 Lectures

Students Test - 5 Lectures

Total Lectures 60 + 15 = 75

Reference Books:

1. Computer System Architecture – By Morris Mano (PHI).
2. Digital Logic And Computer Design – By Morris Mano.
3. Digital Computer Electronics – By Malvino And Leach.

Course Outcome:

- Able to Understand logic circuits and boolean algebra forms as the basics of digital computer.
- Able to Explore the building up of Sequential and Combinational logic from basic gates
- Able to explore digital components
- Able to Understand data representation

Hands On (Not to be asked in examination):

- Instruction Formats - Simulator Base Program

Additional Topics to be taught during the semester-2 (Not to be asked in examination):

Following tools should be used to train students.

- Simulator 8051
- Using Trainer kit