

Bachelor of Computer Application
(Semester - 1 and Semester - 2)
Saurashtra University
Effective from June – 2016

CS-09: COMPUTER ORGANIZATION AND ARCHITECTURE		
Objective: To learn how hardware of computer system works		
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	Digital Component	<ul style="list-style-type: none"> • Integrated Circuits <ul style="list-style-type: none"> ▪ Decoders (2 X 4, 3 X 8) ▪ Encoders (Octal to Binary – 8 X 3) ▪ Multiplexer (4 X 1) ▪ Demultiplexer (1 X 4) • Register <ul style="list-style-type: none"> ▪ Block diagram of register ▪ Parallel register and shift register ▪ Asynchronous 4-bits Binary Counter
3	Data Representation	<ul style="list-style-type: none"> • Multiplication and division of two binary numbers • Floating point representation • Fixed point representation • Error Detection code – (Parity Bit)
4	Central Processing Unit	<ul style="list-style-type: none"> • Introduction Of CPU • Major component of CPU • General Register Organization

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		<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 • Arithmetic And Logic Unit <ul style="list-style-type: none"> ▪ Block diagram of ALU • Interrupts
5	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

Students 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.

Hands On (Not to be asked in examination):

- Instruction Formats
- Simulator Base Program