

Unit	Contents of the Unit	Hours	COs
1	DIGITAL PRINCIPLES, DIGITAL LOGIC: Introduction to Binary Systems, Definitions for Digital Signals, Digital Waveform, Digital Logic: Positive and Negative Logic, The Basic Gates: NOT, OR, AND, Universal Logic Gates: NOR, NAND ARITHMETIC BUILDING BLOCKS: Arithmetic Building Blocks, Adder-subtractor, Fast Adder, Arithmetic Logic Unit	08	CO1
2	COMBINATIONAL LOGIC CIRCUITS: Sum-of-Products Method, Truth Table to Karnaugh Map, Pairs Quads, and Octets, Karnaugh Simplifications, Don't-care Conditions, Product-of-sums Method and simplifications, Simplification by EVM, Simplification by Quine-McClusky Method.	08	CO1 CO2
3	DATA-PROCESSING CIRCUITS: Multiplexers, Demultiplexers, 1-of-16 Decoder, BCD-to-decimal Decoders, Seven-segment Decoders, Encoders, Exclusive-or Gates, Parity Generators and Checkers, Magnitude Comparator CLOCKS: Clock Waveform, Edge triggering and Level Triggering	08	CO3 CO4
4	FLIP-FLOPS: Clocked D FLIP-FLOP, Edge-triggered D FLIP-FLOP, Edge-triggered JK FLIP-FLOP, FLIP-FLOP Timing, JK Master-slave FLIP-FLOP, Various Representation of FLIP-FLOP's, Analysis of Sequential Circuits REGISTERS: Types of Registers, Serial In - Serial Out, Serial In - Parallel out, Parallel In - Serial Out, Parallel In - Parallel Out, Universal Shift Register, Applications of Shift Registers	08	CO3 CO4 CO5
5	COUNTERS: Asynchronous Counters, Decoding Gates, Synchronous Counters, Counter Design as a Synthesis problem, A Digital Clock VERILOG IMPLEMENTATION: Introduction, Implementation Models, Verilog for Combinational Circuits and Data Processing Circuits, Verilog Constructs for Storage, Counter Design using Verilog	08	CO4 CO5 CO6

Self-study component:

BOOLEAN ALGEBRA: Basic Definitions, Axiomatic Definition of Boolean Algebra, Basic Theorems and Properties of Boolean Algebra

NUMBER SYSTEMS: Decimal, Binary, Octal and Hexadecimal, Conversion from one system to another, Representation of negative numbers, Representation of BCD numbers, Character representation, Character coding schemes, ASCII, EBCDIC etc.

Switch Contact Bounce Circuits

HAZARDS AND HAZARD COVERS