GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - ELECTRONICS & COMMUNICATION ENGINEERING

Semester: II

Subject Name: DIGITAL LOGIC DESIGN

Sr. No.	Course content
1.	**Binary System:** Digital computer and digital systems, Binary Number, Number base conversion Octal and Hexadecimal Number, complements, Binary Codes, Binary Storage and register, Binary Logic, Integrated Circuit.
2.	**Boolean Algebra and Logic Gates** : Basic Definition, Axiomatic Definition of Boolean Algebra, Basic Theorem and Properties of Boolean Algebra, Minterms And Maxterms, Logic Operations, Digital Logic Gates, IC digital Logic Families.
3.	**Simplification of Boolean Functions**: Different types Map method, Product of sum Simplification, NAND or NOR implementation, Don't Care condition, Tabulation method.
4.	**Combinational Logic :** Introduction, Design Procedure, adder, subtractor, Code Conversion, Universal Gate.
5.	**Combinational Logic With MSI AND LSI** : Introduction, Binary Parallel Adder, Decimal Adder, Magnitude Comparator, Decoder, Multiplexer, ROM, Programmable Logic Array.
6.	**Sequential Logic**: Introduction, Flip-Flops, Triggering of Flip-Flops, Analysis of Clocked Sequential Circuits, State Reduction and Assignment, Flip-Flop Excitation Tables, Design Procedure, Design of Counters, Design with State Equations.
7.	**Registers Transfer Logic & Micro-Operation** : Introduction, Inter-register Transfer, Arithmetic, logic and shift Micro-Operations, Conditional Control Statements, Fixed-Point Binary Data, overflow, Arithmetic Shifts, Decimal Data, Floating-Point Data, Instruction Codes, Design of Simple Computer.
8.	**Registers, Counters and the Memory unit :** Introduction, Registers, Shift Registers, Ripple Counters, Synchronous Counters, Timing Sequences, Memory Unit.

9.	**Processor Logic Design :** Introduction, Processor Organization, Arithmetic Logic Unit, Design of Arithmetic and logic circuit, Design of ALU. Status Register, Design of shifter, Processor Unit,Design of Accumulator.
10.	**Control Logic Design :** Introduction, Control Organization, Hard-Wired Control, Micro-Program Control, .

Reference Books:

1. Digital Logic and Computer Design By M Morris Mano
2. Principle of digital Electronics By Malvino & Leach
3. Modern Digital Electronics By R.P.Jain