GOVERNMENT GIRLS POLYTECHNIC BILASPUR
DEPARTMENT OF COMPUTER SCIENCE & IT

LESSON PLAN
SESSION : JULY-DEC 2024

Course Name : Digital Electronics
Subject Code : 2033375(028)
Name of Subject teacher : SUMEET KUMAR DEWANGAN
Lecture plus Tutorial/Week : 3

Course Outcomes	Topics / Subtopics to be Covered	No. of Periods Planned
CO1: Apply number systems and binary codes used in digital electronics.	**Unit 1 – Number System and Codes**	
	Number Systems (Binary, Octal, Decimal, Hexadecimal) and Conversions	2
	1's and 2's Complement of Numbers	1
	Binary Arithmetic: Addition and Subtraction	2
	Binary Arithmetic: Multiplication and Division	1
	Binary Codes: Weighted and Unweighted Codes	1
	Excess-3 Code and Gray Code	1
	Error Detection, Correction and Hamming Code	1
	BCD Code and ASCII Code	1
CO2: Analyze and simplify logic circuits using Boolean algebra and logic gates.	**Unit 2 – Logic Gates and Boolean Algebra**	
	Basic Logic Gates: AND, OR, NOT, EX-OR, EX-NOR	1
	Universal Gates: NAND, NOR and Implementation of Basic Gates	2
	Boolean Algebra and Boolean Theorems	2
	De Morgan's Theorem and Duality	1
	Maxterm, Minterm, SOP and POS Expressions	1
	Simplification using Boolean Algebra	1
	K-Map Simplification (up to 4 variables)	2
CO3: Design and analyze combinational logic circuits.	**Unit 3 – Combinational Circuits**	
	Half Adder, Full Adder	1
	Half Subtractor and Full Subtractor	1
	Parallel Adder, 4-bit Binary Adder and	1

Course Outcomes	Topics / Subtopics to be Covered	No. of Periods Planned
	Subtractor	
	BCD Adder and Magnitude Comparator	1
	Encoders (4-to-2, 8-to-3)	1
	Decoders (3-to-8, BCD to Decimal, Seven Segment)	1
	Multiplexer (2×1, 4×1, 8×1)	1
	Demultiplexer and Applications of MUX/DEMUX	1
CO4: Explain the operation and design of sequential circuits.	**Unit 4 – Sequential Circuits**	
	Flip-Flops and Latches (RS, JK, D, T)	2
	Edge Triggering, Level Triggering, Race Around Condition, Master Slave FF	1
	Counters: Synchronous and Asynchronous Counters	1
	Ripple Counter, Up-Down Counter, Decade Counter	1
	Registers and Shift Registers (SISO, SIPO, PISO, PIPO)	1
CO5: Explain digital converters and characteristics of logic families.	**Unit 5 – Converters and Logic Families**	
	Digital to Analog Converters (Weighted Resistor and R-2R Ladder)	1
	Analog to Digital Converters (Counter, Ramp, Successive Approximation, Flash)	1
	Digital IC Specifications	1
	Logic Families: TTL, RTL, DTL, ECL, I2L, CMOS	1

Total Lectures: 38

Sumeet Kumar Dewangan