



Techno India N.J.R. Institute of Technology

Academic Administration of Techno NJR Institute

Syllabus Deployment

Name of Faculty	: Mr. Hitesh Sen	Subject Code: 4ME3-21
Subject	: Digital Electronics Lab	Sem: IV
Department	: Mechanical Engineering	
Total No. of Hours Planned:	12	Max. Marks: 75(IA: 45, ETE: 30)

COURSE OUTCOMES:

At the end of this course students will be able to:

- CO1: Distinguish between analog and digital systems.
- CO2: Identify the various digital ICs and understand their operation.
- CO3: Apply Boolean laws and K-map to simplify the digital circuits.
- CO4: Understand the function of elementary digital circuits under real and simulated environment.

SN	Agenda	Exposure
1	Gate System	To verify the truth tables of basic logic gates: AND, OR, NOR, NAND, NOR. Also to verify the truth table of Ex-OR, Ex-NOR (For 2, 3 & 4 inputs using gates with 2, 3, & 4 inputs).
2		To verify the truth table of OR, AND, NOR, Ex-OR. Ex-NOR realized using NAND & NOR gates.
3	SOP & POS System	To realize an SOP and POS expression.
4	Gate System	To realize Half adder/ Subtractor & Full Adder/ Subtractor using NAND & NOR gates and to verify their truth tables.
5	Power Electronics	To realize a 4-bit ripple adder/ Subtractor using basic half adder/ Subtractor & basic Full Adder/ Subtractor.
6		To verify the truth table of 4-to-1 multiplexer and 1-to-4 demultiplexer. Realize the multiplexer using basic gates only. Also to construct and 8-to-1 multiplexer and 1-to-8 demultiplexer using blocks of 4-to-1 multiplexer and 1-to-4 demultiplexer.

7	Design & Realize a combinational circuit that will accept a 2421 BCD code and drive a TIL -3 I 2 seven-segment display.
8	Using basic logic gates, realize the R-S, J-K and D-flip flops with and without clock signal and verify their truth table.
9	Construct a divide by 2, 4 & 8 asynchronous counter. Construct a 4-bit binary counter and ring counter for a particular output pattern using D flip flop.
10	Perform input/output operations on parallel in/parallel out and Serial in/Serial out registers using clock. Also exercise loading only one of multiple values into the register using multiplexer

TEXT/REFERENCE BOOKS

1. MICROELECTRONIC CIRCUITS – THEORY AND APPLICATIONS, ADEL S SEDRA, KENNETH C SMITH AND ARUN N CHANDORKAR, OXFORD UNIVERSITY PRESS
2. OP-AMPS AND LINEAR INTEGRATED CIRCUIT TECHNOLOGY, RAMAKANT A. GAYAKWAD, PRENTICE HALL OF INDIA
3. ELECTRONIC DEVICES AND CIRCUITS, J.B. GUPTA, S.K. KATARIA & SONS.
4. MODERN DIGITAL ELECTRONICS, R.P JAIN, TATA MCGRAW-HILL EDUCATION
5. DIGITAL CIRCUIT & LOGIC DESIGN, MORRIS MANO, PRENTICE HALL OF INDIA
6. DIGITAL PRINCIPLES & APPLICATIONS, A.P.MALVINO & D.P LEACH, TATA MCGRAW-HILL EDUCATION