Discipline : ETC	Semester:- 3rd	Name of the Teaching Faculty: - LINCOLN MOHANTY
Subject:- DIGITAL ELECTRONICS (TH-3)	No of Days/per Week Class Allotted :- 04	Semester From:- 15.09.2022 To:- 22.12.2022
Week	Class Day	Theory
1st	1st	Introduction to DIGITAL ELECTRONICS NUMBER SYSTEMS AND CODES
	2nd	List different number system & their relevance: binary, octal, decimal, Hexadecimal, Study the Conversion from one number system to another
	3rd	Perform Arithmetic operations of binary number systems.
	4th	1's & 2's complement of Binary numbers., Perform Subtraction of binary numbers using complementary numbers. Perform multiplication and division of binary numbers.
2nd	1st	Define concept of Digital Code & its application. Distinguish between weighted & non-weight Code
	2nd	Study Codes: definition, relevance Types of code (8-4-2-1, Gray, Excess-3 and importance of parity bit
	3rd	LOGIC GATES Discuss the Basic Logic & representation using electric signals. Learn the Basic Logic gates (NOT, OR, AND, NOR, NAND, EX-OR & EXNOR) – Symbol, function, expression, truth table & example IC nos., Define Universal Gates with examples & realization of other gates
	4th	BOOLEAN ALGEBRA Understand Boolean : constants, variables & functions. Comprehend the Laws of Boolean algebra
3rd	1st	State and prove Demorgan's Theorems. Represent Logic Expression : SOP & POS forms & conversion
	2nd	Simplify the Logic Expression/Functions (Maximum of 4 variables) : using Boolean algebra and Karnaugh's map methods
	3rd	What is don't care conditions ?Realisation of simplified logic expression using K-Map
	4th	Realisation of simplified logic expression using gates. Illustrate with examples the above.
4th	1st	COMBINATIONAL CIRCUITS
	2nd	Define a Combinational Circuit and explain with examples. Arithmetic Circuits (Binary)
	3rd	Realise function, functional expression, logic circuit, gate level circuit, truth table & applications of Half-adders,
	4th	Half-adder & Half-Subtractor. Explain Serial & Parallel address: concept comparison & application
5th	1st	Full-adder & full-Subtractor. Explain Serial & Parallel address: concept comparison & application
	2nd	Discuss Multiplexers(4:1): definition, relevance, gate level circuit of simple.
	3rd	Discuss De-multiplexers (1:4) logic circuit with truth Table

	4th	Explain the working of Binary-Decimal Encoder & Decoder
6th	1st	Explain the working of Digital comparator (3 bit)
	2nd	Explain the working of Seven segment Decoder
	3rd	Applications of Half-adder & Half-Subtractor, Full-adder & full-Subtractor, Multiplexers(4:1), De-multiplexers (1:4)
	4th	Applications of Encoder & Decoder, Digital comparator (3 Bit), Seven segment Decoder
7th	1st	SEQUENTIAL LOGIC CIRCUITS
	2nd	Define Sequential Circuit : Explain with examples.
	3rd	Principle of flip-flops operation, its Types
	4th	Know the Clock-definition characteristics, types of triggering & waveform.
8th	1st	Define Flip-Flop
	2nd	SR Flip Flop using NAND,NOR Latch (un clocked)
	3rd	SR Flip Flop using NAND,NOR Latch (un clocked)
	4th	SR Flip Flop using NAND,NOR Latch (un clocked)
9th	1st	Clocked SR,D,JK,T,JK Master Slave flip-flops-Symbol, logic Circuit, truth table and applications
	2nd	Clocked SR,D,JK,T,JK Master Slave flip-flops-Symbol, logic Circuit, truth table and applications
	3rd	Clocked SR,D,JK,T,JK Master Slave flip-flops-Symbol, logic Circuit, truth table and applications
	4th	Concept of Racing and how it can be avoided.
10th	1st	Registers, Memories & PLD
	2nd	Shift Registers-Serial in Serial -out, Serial- in Parallel-out, Parallel in serial out and Parallel in parallel out
	3rd	Universal shift registers-Applications.
	4th	Types of Counter & applications
11th	1st	Binary counter, Asynchronous ripple counter (UP & DOWN), Decade counter
	2nd	Synchronous counter, Ring Counter
	3rd	Concept of memories-RAM, ROM, static RAM, dynamic RAM,PS RAM
	4th	Basic concept of PLD & applications
12th	1st	A/D and D/A Converters
	2nd	Necessity of A/D and D/A converters
	3rd	D/A conversion using weighted resistors methods.

13th	1st	Realize a 4-bit asynchronous UP/Down Counter. And Study shift registers -4 bit Registers
	2nd	
	3rd	
	4th	
14th	1st	Verify the operation 8-bit D /A and A/ D conversion & test its performance And Study display devices LCD, 7-segment displays.
	2nd	
	3rd	
	4th	
15th	1st	Mini Project using Software: To collect data like pin configurations, display devices, Operational characteristics, applications and critical factors etc. on all digital ICs studied in theory and compile a project report throughout and submit at the end of the semester. To assemble and tests circuits using above digital ICs with test points e.g. Digital Clock / Frequency Counter / Running Glow Light upto 999/Solar cell &Opto coupler applications.
	2nd	
	3rd	
	4th	

14/09/2022

Teaching Faculty

01/10/2022

HOD , ETC

6/11/2022

Principal

Government Polytechnic, dhenkanal

Principal
Govt. Polytechnic
Dhenkanal