BHUBANANANDA ORISSA SCHOOL OF ENGINEERING

LESSON PLAN

BY : PRADEEP KUMAR DHAL SAMANT (Lecturer)

JYOTI PRAKASH BEHURA (Guest Faculty)

SUBJECT: VLSI & EMBEDDED SYSTEM

SEMESTER: 5TH

BRANCH: E&TC

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Discipline: ETC	Semester:5th	Name of the Teaching Faculty: PRADEEP KUMAR DHAL SAMANT (Lect.) / JYOTI PRAKASH BEHURA (GF)
Subject: VLSI & EMBEDDED SYSTEM (TH-2)	No of Days/per week class allotted: 4 (MON,TUE, FRI,SAT)	Semester from 01.07.2024 to 08.11.2024 No of weeks:18
Week No.	Class Day	Theory Topics
1st	01-07-2024	**Chapter-1- Introduction to VLSI & MOS Transistor**
	02-07-2024	**Chapter-1- Introduction to VLSI & MOS Transistor** 1.1. Historical perspective- Introduction 1.2. Classification of CMOS digital circuit types
	05-07-2024	1.3 Introduction to MOS Transistor& Basic operation of MOSFET
	06-07-2024	1.4. Structure and operation of MOSFET (n-MOS enhancement type) & COMS
2nd	08-07-2024	Structure and operation COMS
	09-07-2024	1.5. MOSFET V-I characteristics
	12-07-2024	
23	13-07-2024	1.6. Working of MOSFET capacitances.
24	15-07-2024	1.7 Modelling of MOS Transistors including Basic concept the SPICE level-1 models, the level-2 and level-3 model
3rd 27	16-07-2024	
30	19-07-2024	1.8 Flow Circuit design procedures
31	20-07-2024	1.9 VLSI Design Flow & Y chart
2	22-07-2024	1.10 Design Hierarchy 1.11 VLSI design styles -FPGA, Gate Array Design, Standard cells based, Full custom
4th 3	23-07-2024	Unit-2: Fabrication of MOSFET 2.1 Simplified process sequence for fabrication 2.2 Basic steps in Fabrication processes Flow
6	26-07-2024	2.3 Fabrication process of nMOS Transistor
10	27-07-2024	2.4 CMOS n-well Fabrication Process Flow

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5th	29-07-2024	2.5 MOS Fabrication process by n-well on p-substrate
	30-07-2024	2.6 CMOS Fabrication process by P-well on n-substrate
	02-08-2024	2.7 Layout Design rules
	03-08-2024	2.8 Stick Diagrams of CMOS inverter
6th	05-08-2024	**CLASS TEST-I**
	06-08-2024	**Unit-3: MOS Inverter** 3.1 Basic nMOS inverters,
	09-08-2024	3.2 Working of Resistive-load Inverter
	10-08-2024	3.3 Inverter with n-Type MOSFET Load – Enhancement Load, Depletion n-MOS inverter
7th	12-08-2024	3.4 CMOS inverter – circuit operation and characteristics and interconnect effects: Delay time definitions
	13-08-2024	3.5 CMOS Inventor design with delay constraints – Two sample mask lay out for p-type substrate.
	16-08-2024	
	17-08-2024	REVISION
8th	20-08-2024	**Unit-4: Static Combinational, Sequential, Dynamics logic circuits & Memories** 4.1 Define Static Combinational logic , working of Static CMOS logic circuits (Two-input NAND Gate)
	23-08-2024	Working of Static CMOS logic circuits (Two-input NAND Gate)
	24-08-2024	4.2 CMOS logic circuits (NAND2 Gate)
9th	27-08-2024	4.3 CMOS Transmission Gates(Pass gate)
	30-08-2024	4.4 Complex Logic Circuits - Basics 4.5 Classification of Logic circuits based on their temporal behaviour
	31-08-2024	4.6 SR Flip latch Circuit
10th	02-09-2024	4.7 Clocked SR latch only.
	03-09-2024	4.8 CMOS D latch.
	06-09-2024	4.9 Basic principles of Dynamic Pass Transistor Circuits

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11th	09-09-2024	4.10 Dynamic RAM, SRAM
	10-09-2024	4.11 Flash memory
	13-09-2024	1st Internal
	14-09-2024	**Unit-5: System Design method & synthesis** 5.1 Design Language (SPL & HDL)& HDL & EDA tools & VHDL and packages Xlinx design
12th	17-09-2024	5.2 Design strategies & concept of FPGA with standard cell based
	20-09-2024	5.3 VHDL for design synthesis using CPLD or FPGA
	21-09-2024	
13th	23-09-2024	5.4 Raspberry Pi - Basic idea
	24-09-2024	REVISION (UNIT-5)
	27-09-2024	**Unit-6: Introduction to Embedded Systems**
	28-09-2024	6.1 Embedded Systems Overview, list of embedded systems, characteristics ,example – A Digital Camera
14th	30-09-2024	6.2 Embedded Systems Technologies--Technology – Definition -Technology for Embedded Systems
	01-10-2024	-Processor Technology
	04-10-2024	-IC Technology
	05-10-2024	6.3 Design Technology-Processor Technology, General Purpose Processors – Software
15th	14-10-2024	6.3 Design Technology-Processor Technology, General Purpose Processors – Software
	15-10-2024	Basic Architecture of Single Purpose Processors – Hardware
	18-10-2024	
	19-10-2024	6.4 Application – Specific Processors
16th	21-10-2024	6.4 Application – Microcontrollers, Digital Signal Processors(DSP)
	22-10-2024	6.5 IC Technology- Full Custom / VLSI, Semi-Custom
	25-10-2024	
	26-10-2024	ASIC (Gate Array & Standard Cell)

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17th	28-10-2024	PLD (Programmable Logic Device)
	29-10-2024	6.6 Basic idea of Arduino micro controller
	01-11-2024	REVISION
	02-11-2024	**CLASS TEST-II**
18th	04-11-2024	OVERALL REVISION
	05-11-2024	OVERALL REVISION
	08-11-2024	**PREVIOUS YEAR QUESTION ANSWER DISCUSSION**

Jyoti Prakash Behura.

Signature of Faculty

HOD, E&TC

Sr. Lecturer
Electronics & Telecomm. Engg
BOSE, Cuttack

Principal