

BHARAT INSTITUTE OF ENGINEERING & TECHNOLOGY

**SIVARAM VIHAR, GHATAKESWAR HILLS
MOHADA, BERHAMPUR (GM.)**



STUDENT'S ATTENDANCE REGISTER

Time	9:05	9:55	10:45	11:35	12:25
Day	9:55	10:45	11:35	12:25	1:15
Mon					VLSI Lab (12:25-1:15 and 1:55-3:35)
Tue				VLSI	
Wed				VLSI	
Thu	VLSI				
Fri					
Sat		VLSI			

Year/ Session : 2023 (winter)	Semester from Date: 01/08/2023 To Date : 30/11/2023
Semester & Branch	5 th sem & E&TC
Subject with Code	VLSI AND EMBEDDED SYSTEM. (TH-2)
Name of the Faculty Member	Pinaki Bisayi
No of Weeks:	No of Class Allotted/Week : 4

B.I.E.T., COURSE PLAN

Month	Week	Class Day	Theory/Practical Topic
			<u>UNIT-1</u> <u>Introduction to - VLSI & MOS</u> <u>Transistor</u>
A U G U S T	1st	11/8/23	1.1 Historical perspective - Introduction
		24/8/23	1.2 Classification of CMOS digital circuit types.
		31/8/23 5/9/23	1.3 Introduction to MOS Transistors & basic oper ⁿ of MOSFET.
	2nd	8/9/23	1.4 Structure and operation of MOSFET (n -mos enhancement type) & CMOS.
		9/9/23	1.5 MOSFET V-I characteristics.
		10/9/23	1.6 Introding of MOSFET capacitance.
		12/9/23	1.7 Modelling of MOS transistor

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B.I.E.T., COURSE PLAN

Month	Week	Class Day	Theory/Practical Topic
	3 rd	16/8/23	including basic concept the SPICE level-1 models, the level-2 Model & level-3 models.
		18/8/23	1.8 Flow circuit design procedures.
		19/8/23	1.9 VLSI design flow & Y-chart.
	4 th	22/8/23	1.10 Design Hierarchy.
		23/8/23	1.11 VLSI design styles - FPGA, Gate array design, standard cells, bare/ full custom.

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Month	Week	Class Day	Theory/Practical Topic
			<u>UNIT-2</u> <u>Fabrication OF MOSFET</u>
		24/8/23	2.1 Simplified process sequence for fabrication.
		28/8/23	2.2 Basic steps in fabrication processes flow.
	5th	29/8/23	2.3 Fabrication process of n-MOS transistor.
	11th	2/9/23	2.4 CMOS n-well fabrication process flow.
			2.5 MOS fabrication process by n-well on p-substrate.
	21st	5/9/23	2.6 CMOS fabrication process by p-well on n-substrate.

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Month	Week	Class Day	Theory/Practical Topic
	2nd	7/9/23 9/9/23 12/9/23	2.7. Layout design rules. 2.8. Stick diagrams of CMOS inverter.
	3rd	13/9/23 14/9/23	<p style="text-align: center;"><u>UNIT 3</u></p> <p style="text-align: center;"><u>MOS Inverter</u></p> <p>3.1 Basic n-MOS inverters.</p> <p>3.2. Working of resistive-load inverter.</p>
	4th	16/9/23	
		23/9/23	3.3 Inverter with n-type MOSFET n-load. - Enhancement load, Depletion n-Mos inverter
			3.4. CMOS inverter - circuit operation and characteristics

Signature of the Faculty: Upadhyay 1/8/2023

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Month	Week	Class Day	Theory/Practical Topic
	5th	26/9/23	and interconnect effects. Delay time definitions.
		27/9/23 30/9/23	3.5 CMOS inverter design with delay constraints - Two samples mask layout for P-type substrate.
O C T O B E R	2th		<u>UNIT-4</u> <u>Static Combinational, sequential, Dynamic, logic circuits & Memories</u>
		3/10/23 4/10/23	4.1 Define static combinational logic, working, of static CMOS logic circuits. (Two input NAND Gate)

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B.I.E.T., COURSE PLAN

Month	Week	Class Day	Theory/Practical Topic
		5/10/23	4.2 CMOS logic circuits. (NAND-2 gate)
		7/10/23	4.3 CMOS transmission Gates. (pass Gate).
	3rd	10/10/23	4.4 Complex logic circuits. Basics.
		11/10/23	4.5 Classification of logic circuits based on their temporal behaviour.
		12/10/23	4.6 SR flip-flop circuit.
		14/10/23	4.7 clocked SR latch only.
	4th	17/10/23	4.8 CMOS D-latch.
			4.9 Basic principle of dynamic pass Transistor circuit.

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Month	Week	Class Day	Theory/Practical Topic
		18/10/23	4.10 Dynamic RAM, SRAM.
		19/10/23	4.11 Flash memory.
	6th	31/10/23	
			<u>UNIT-5</u>
			<u>System Design Method & synthesis</u>
N O V E M B E R	1st	1/11/23	5.1 Design Language (SPL & HDL)
		2/11/23	& HDL, & EDA tools, & VHDL & packages Xilinx.
	2nd	2/11/23	5.2 Design strategies & concept of FPGA with standard cell based design.
		7/11/23	5.3 VHDL for design synthesis using CPLD or FPGA.
		8/11/23	
	9/11/23	5.4 Raspberry - Pi - Basic idea.	
		11/11/23	

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Month	Week	Class Day	Theory/Practical Topic
			<u>UNIT-6</u> <u>Introduction TO Embedded</u> <u>System</u>
N O V E M B E R	3rd	14/11/23	6.1 Embedded systems overview
		15/11/23	list of embedded systems characteristics - example - A digital camera.
	4th	16/11/23	6.2 Embedded systems - Technology
		18/11/23	Technology - Definition.
		21/11/23	- Technology for embedded systems
		23/11/23	- Processor Technology. - IC technology.

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Month	Week	Class Day	Theory/Practical Topic
		25/11/23 28/11/23	6.3 Design Technology - Processor technology, General purposes Processors - S/W, Basic Architecture of single purpose processors Hardware.
	5th	28/11/23 29/11/23 30/11/23	6.4 Ic technology - Full custom/ VLSI, semi-custom ASIC (Gate array & standard cell) PLD (programmable Logic Device).
			6.5 Basic idea of Arduino - micro controller.

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B.I.E.T., COURSE PLAN

Month	Week	Class Day	Theory/Practical Topic
			6.6 Application-Specific processors, Microcontrollers, Digital Signal Processors.

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P. Inaki Basayi
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