



DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION ENGINEERING

ACADEMIC LESSION PLAN FOR WINTER SEMESTER 2023- 24	
JHARSUGUDA ENGINEERING SCHOOL, JHARSUGUDA	
Name of the Faculty: RASHMITA BADHAI	Academic Year:2023-24
Course No.: TH-2	Course Name: VLSI & EMBEDDED SYSTEM
Program: Diploma	Branch: ELECTRONICS & TELECOMMUNICATION
Year/Sem: 3rd / 5th	Section: A
Total Period s : 60 P/ Sem	End Semester Exam : 80marks
Internal Assessment : 20 Marks	TOTAL MARKS :100 Marks

Sl. No.	Period	Time (min)	Unit/ Chapter	Topic to be covered	Teaching method
1.	1.	55	1	Historical perspective- Introduction	Black board
2.	2.	55	1	Classification of CMOS digital circuit types	Black board
3.	3.	55	1	Introduction to MOS Transistor& Basic operation of MOSFET.	Black board
4.	4.	55	1	Structure and operation of MOSFET (n-MOS enhancement type) & COMS	Audio visual smart class
5.	5.	55	1	MOSFET V-I characteristics	Black board
6.	6.	55	1	Working of MOSFET capacitances	Black board
7.	7.	55	1	Modelling of MOS Transistors including Basic concept the SPICE level-1 models, the level-2 and level-3 model.	Black board
8.	8.	55	1	Flow Circuit design procedures	Black board
9.	9.	55	1	VLSI Design Flow & Y chart	Black board
10.	10.	55	1	Design Hierarchy	Black board
11.	11.	55	1	VLSI design styles-FPGA, Gate Array Design,	Black board
12.	12.	55	1	VLSI design styles- Standard cells based, Full custom	Audio visual smart class
13.	13.	55	2	Simplified process sequence for fabrication	Black board
14.	14.	55	2	Basic steps in Fabrication processes Flow	Black board
15.	15.	55	2	Fabrication process of nMOS Transistor	Black board
16.	16.	55	2	Fabrication process of nMOS Transistor	Black board
17.	17.	55	2	CMOS n-well Fabrication Process Flow	Audio visual smart class

18.	18.	55	2	MOS Fabrication process by n-well on p-substrate	Black board
19.	19.	55	2	CMOS Fabrication process by P-well on n-substrate	Black board
20.	20.	55	2	Layout Design rules	Audio visual smart class
21.	21.	55	2	Stick Diagrams of CMOS inverter	Black board
22.	22.	55	2	Stick Diagrams of CMOS inverter	Audio visual smart class
23.	23.	55	3	Basic nMOS inverters,	Black board
24.	24.	55	3	Working of Resistive-load Inverter	Black board
25.	25.	55	3	Inverter with n-Type MOSFET Load	Black board
26.	26.	55	3	Enhancement Load,	Black board
27.	27.	55	3	Depletion n-MOS inverter	Black board
28.	28.	55	3	CMOS inverter – circuit operation	Audio visual smart class
29.	29.	55	3	CMOS inverter – characteristics and interconnect effects: Delay time definitions	Black board
30.	30.	55	3	CMOS Inverter design with delay constraints –.	Black board
31.	31.	55	3	Two sample mask lay out for p-type substrate	Audio visual smart class
32.	32.	55	4	Define Static Combinational logic ,	Audio visual smart class
33.	33.	55	4	working of Static CMOS logic circuits (Two-input NAND Gate)	Audio visual smart class
34.	34.	55	4	CMOS logic circuits (NAND2 Gate)	Black board
35.	35.	55	4	CMOS Transmission Gates(Pass gate)	Black board
36.	36.	55	4	Complex Logic Circuits - Basics	Black board
37.	37.	55	4	Classification of Logic circuits based on their temporal behaviour	Black board
38.	38.	55	4	SR Flip latch Circuit,	Black board
39.	39.	55	4	Clocked SR latch	Black board
40.	40.	55	4	CMOS D latch.	Black board
41.	41.	55	4	Basic principles of Dynamic Pass Transistor Circuits	Black board
42.	42.	55	4	Dynamic RAM	Audio visual smart class
43.	43.	55	4	SRAM	Black board
44.	44.	55	4	Flash memory	Black board
45.	45.	55	5	Design Language (SPL & HDL)& HDL & EDA tools & VHDL and packages Xlinx	Audio visual smart class
46.	46.	55	5	Design strategies & concept of FPGA with standard cell based design	Black board
47.	47.	55	5	VHDL for design synthesis using CPLD or FPGA	Audio visual smart class
48.	48.	55	5	VHDL for design synthesis using CPLD or FPGA	Audio visual smart class
49.	49.	55	5	Raspberry Pi - Basic idea	Black board
50.	50.	55	6	Embedded Systems Overview,list of embedded systems,characteristics ,example – A Digital Camer	Black board

51.	51.	55	6	Embedded Systems Technologies--Technology – Definition -Technology for Embedded Systems	Audio visual smart class
52.	52.	55	6	Processor Technology	Black board
53.	53.	55	6	IC Technology	Black board
54.	54.	55	6	DesignTechnology-Processor Technology,	Black board
55.	55.	55	6	General Purpose Processors – Software	Black board
56.	56.	55	6	Basic Architecture of Single Purpose Processors – Hardware	Black board
57.	57.	55	6	Application–Specific Processors, Microcontrollers, Digital Signal Processors(DSP)	Audio visual smart class
58.	58.	55	6	IC Technology- Full Custom / VLSI	Black board
59.	59.	55	6	Semi-Custom ASIC (Gate Array & Standard Cell), PLD (Programmable Logic Device)	Black board
60.	60.	55	6	Basic idea of Arduino micro controller	Audio visual smart class