GIET POLYTECHNIC, JAGATPUR, CUTTACK

LESSON PLAN

Discipline: ETC	Semester: 5th	Name Of The Teaching Faculty: SUGANDHA PUSPITA MADHUJHARA
Subject: VLSI&ES (TH-2)	No. Of Days Per Week Class Allotted: 04 P	Semester From Date: 01.07.2024 To Date: 08.11.2024 No. of weeks: 15

Week	Class Day	Theory Topic
1st week	1st	➢ Introduction to VLSI
	2nd	➢ Classification of CMOS digital circuits
	3rd	➢ Introduction to MOS transistor, structure
	4th	➢ Basic operation of MOS
2nd week	1st	➢ MOS I-V characteristics
	2nd	➢ MOS capacitance
	3rd	➢ Modelling of MOS
	4th	➢ Flow of circuit design procedure
3rd week	1st	➢ Y-chart
	2nd	➢ Design hierarchy
	3rd	➢ VLSI design style-FPGA, gate array design, Standard cell-baseddesign, full custom design
	4th	➢ Fabrication of MOSFET, Basic steps of fabrication
4th week	1st	➢ Fabrication of nMOS
	2nd	➢ Fabrication of pMOS
	3rd	➢ Some important terms related to fabrication
	4th	➢ MOS fabrication process by n-well on p-substrate
5th week	1st	➢ MOS fabrication process by n-well on p-substrate
	2nd	➢ MOS fabrication process by p-well on n-substrate
	3rd	➢ MOS fabrication process by p-well on n-substrate
	4th	➢ Layout design rule
6th week	1st	➢ Stick diagram
	2nd	➢ nMOS inverter
	3rd	➢ VTC of nMOS inverter
	4th	➢ Resistive load nMOS inverter
7th week	1st	➢ Inverter with MOSFET load
	2nd	➢ Inverter with MOSFET load
	3rd	➢ CMOS inverter
	4th	➢ CMOS inverter
8th week	1st	➢ Delay time definitions
	2nd	➢ Inverter with delay constraints
	3rd	➢ Static combinational digital logic design
	4th	➢ 2 i/p CMOS NAND gate
9th week	1st	➢ Layout of simple CMOS logic gates
	2nd	➢ Complex logic circuits
	3rd	➢ CMOS transmission gate
	4th	➢ Sequential MOS logic circuits
10th week	1st	➢ S-R latch circuit
	2nd	➢ Clocked S-R latch
	3rd	➢ Dynamic logic circuits
	4th	➢ Dynamic pass transistor circuits
11th week	1st	➢ Semiconductor memories, DRAM
	2nd	➢ DRAM
	3rd	➢ SRAM, Flash memory
	4th	➢ Design Language (SPL & HDL) & HDL

12th week	1st	➢ EDA tools & VHDL and packages Xilinx
	2nd	➢ Design strategies & concept of FPGA with standard cell-baseddesign
	3rd	➢ VHDL for design synthesis using CPLD or FPGA
	4th	➢ Raspberry Pi - Basic idea
13th week	1st	➢ Embedded Systems Overview, list of embedded systems, characteristics, example
	2nd	➢ Digital camera
	3rd	➢ Embedded system technology- definition, processor technology,IC technology, Design technology
	4th	➢ General Purpose Processors – Software, Basic Architecture ofSingle Purpose Processors – Hardware
14th week	1st	➢ Application – Specific Processors, Microcontrollers, Digital Signal Processors (DSP)
	2nd	➢ Application – Specific Processors, Microcontrollers, Digital Signal Processors (DSP)
	3rd	➢ Basic idea of Arduino micro controller
	4th	➢ IC Technology- Full Custom / VLSI, Semi-Custom ASIC (Gate Array & Standard Cell), PLD
15th week	1st	➢ IC Technology- Full Custom / VLSI, Semi-Custom ASIC (Gate Array & Standard Cell), PLD
	2nd	➢ Basic idea of Arduino micro controller
	3rd	➢ Basic idea of Arduino micro controller
	4th	➢ REVISION

29/06/24
Signature of faculty

29/06/24
Signature of Sr. Lect.

Head of Dept. (HOD)
Electrical & ETC Engg.
GLY), ...

29/6/24
Signature of principal