

	Discipline: ETC	Semester-5th Winter2023	NAME OF THE FACULTY:JOGESWAR NAIK (Lecturer ETC)
Sl. No.	Subject-Th.2.VLSI AND EMBEDDED SYSTEM	No. Of Days/Week class allotted:04	Semester From date: 01.08.2023 To date: 30.11.2023 No of weeks: 17
	Weeks/Months	Class Day	Topic
1	1st week Aug to 5th week Aug	1st	1.1 Historical perspective- Introductio
		2nd	1.2 Classification of CMOS digital circuit types
		3rd	1.2 Classification of CMOS digital circuit types
		4th	1.3 Introduction to MOS Transistor& Basic operation of MOSFET
2	2nd week 7th Aug to 12th Aug	1st	1.4 Structure and operation of MOSFET (n-MOS enhancement type) & COMS
		2nd	1.3 Introduction to MOS Transistor& Basic operation of MOSFET
		3rd	1.5 MOSFET V-I characteristic
		4th	1.5 MOSFET V-I characteristic
3	3rd Week 14th aug to 19th Aug	1st	1.6 Working of MOSFET capacitance
		2nd	1.6 Working of MOSFET capacitance
		3rd	1.7 Modelling of MOS Transistors including Basic concept the SPICE level-1 models, the level-2 and level-3 model.
		4th	1.7 Modelling of MOS Transistors including Basic concept the SPICE level-1 models, the level-2 and level-3 model.
4	4th week 21th Aug to 26th Aug	1st	1.8 Flow Circuit design procedures
		2nd	1.8 Flow Circuit design procedures
		3rd	1.9 VLSI Design Flow & Y chart
		4th.	1.9 VLSI Design Flow & Y chart
5	5th week 28th Aug to 2nd Sept	1st	1.10 Design Hierarchy
		2nd	1.10 Design Hierarchy
		3rd	1.11 VLSI design styles-FPGA, Gate Array Design, Standard cells based, Full custom
		4th	1.11 VLSI design styles-FPGA, Gate Array Design, Standard cells based, Full custom
6	1st week 4th Sept to 9th sept	1st	2.1 Simplified process sequence for fabricatio
		3rd	2.1 Simplified process sequence for fabricatio
		3rd	2.2 Basic steps in Fabrication processes Flow
		4th	2.3 Fabrication process of nMOS Transistor
		1st	2.4 CMOS n-well Fabrication Process Flow

7	2nd week 11th sept to 16th sept.	2nd	2.5 MOS Fabrication process by n-well on p-substrate
		3rd	2.6 CMOS Fabrication process by P-well on n-substrate
		4th	2.7 Layout Design rules
8	3rd week 18th sept. to 23rd sept	1st	2.8 Stick Diagrams of CMOS inverters
		2nd	2.7 Layout Design rules 2.8 Stick Diagrams of CMOS inverters
		3rd	3.1 Basic nMOS inverters, 3.2 Working of Resistive-load Inverter
		4th	3.3 Inverter with n-Type MOSFET Load – Enhancement Load, Depletion n-MOS inverter
9	4th week 25th Sept to 30th sept	1st	3.4 CMOS inverter – circuit operation and characteristics and interconnect effects: Delay time definitions
		2nd	3.5 CMOS Inverter design with delay constraints – Two sample mask layout for p-type substrate.
		3rd	4.1 Define Static Combinational logic ,working of Static CMOS logic circuits (Two-input
		4th	4.3 CMOS Transmission Gates(Pass gate)
10	1st week 02nd oct. to 07th oct	1st	4.5 Classification of Logic circuits based on their temporal behaviour
		2nd	4.4 Complex Logic Circuits - Basic
		3rd	4.7 Clocked SR latch only.
		4th	4.8 CMOS D latch.
11	2nd week 9th oct. to 14th oct	1st	4.9 Basic principles of Dynamic Pass Transistor Circuits
		2nd	4.9 Basic principles of Dynamic Pass Transistor Circuits
		3rd	4.10 Dynamic RAM, SRAM,
		4th	4.10 Dynamic RAM, SRAM,
12	3rd week 16th oct to 20th oct.	1st	4.11 Flash memory
		2nd	4.11 Flash memory
		3rd	5.1 Design Language (SPL & HDL)& HDL & EDA tools & VHDL and packages Xilinx
		4th	5.1 Design Language (SPL & HDL)& HDL & EDA tools & VHDL and packages Xilinx
13	1st week 30th oct. to 04th Nov	1st	5.2 Design strategies & concept of FPGA with standard cell based design
		2nd	5.2 Design strategies & concept of FPGA with standard cell based design
		3rd	5.3 VHDL for design synthesis using CPLD or FPGA 5.4 Raspberry Pi - Basic idea
		4th	5.3 VHDL for design synthesis using CPLD or FPGA 5.4 Raspberry Pi - Basic idea
14	2nd week 6th Nov to 11th Nov	1st	6.1 Embedded Systems Overview,list of embedded systems,characteristics ,example – A Digital Camera
		2nd	6.1 Embedded Systems Overview,list of embedded systems,characteristics ,example – A Digital Camera
		3rd	6.1 Embedded Systems Overview,list of embedded systems,characteristics ,example – A Digital Camera

15	3rd week 13th Nov to 18th Nov	4th	6.2 Embedded Systems Technologies--Technology – Definition -Technology for Embedded Systems
		1st	6.2 Embedded Systems Technologies--Technology – Definition -Technology for Embedded Systems
		2nd	6.2 Embedded Systems Technologies--Technology – Definition -Technology for Embedded Systems
		3rd	6.3 Design Technology-Processor Technology,General Purpose
		4th	6.3 Design Technology-Processor Technology,General Purpose
16	4th week 20th Nov to 25th Nov	1st	6.4 Application – Specific Processors, Microcontrollers, Digital Signal Processors(DSP)
		2nd	6.4 Application – Specific Processors, Microcontrollers, Digital Signal Processors(DSP)
		3rd	6.4 Application – Specific Processors, Microcontrollers, Digital Signal Processors(DSP)
		4th	6.5 IC Technology- Full Custom / VLSI, Semi-Custom ASIC (Gate Array & Standard Cell), PLD
17	5th week 27th Nov to 30th Nov	1st	6.5 IC Technology- Full Custom / VLSI, Semi-Custom ASIC (Gate Array & Standard Cell), PLD
		2nd	6.5 IC Technology- Full Custom / VLSI, Semi-Custom ASIC (Gate Array & Standard Cell), PLD
		3rd	6.6 Basic idea of Arduino micro controller
		4th	6.6 Basic idea of Arduino micro controller

  
 Signature of the Teacher