

LESSON PLAN (WINTER-2024)		
Discipline: ETC	Semester:5th	Name of the Teaching Faculty: SOMA DASH
Subject: VLSI & Embedded System	No of Days /per week class allotted: 4	Semester From date: 01.07.2024 To date: 08.11.2024 No of Weeks:19
Week	Class Day	Theory Topics
1st	1st	Unit-1: Introduction to VLSI & MOS Transistor(12) 1.1 Historical perspective- Introduction
	2nd	1.2 Classification of CMOS digital circuit types
	3rd	1.3 Introduction to MOS Transistor& Basic operation of MOSFET.
	4th	1.4 Structure and operation of MOSFET (n-MOS enhancement type) & COMS
2nd	1st	1.5 MOSFET V-I characteristics,
	2nd	1.6 Working of MOSFET capacitances.
	3rd	1.7 Modelling of MOS Transistors including Basic concept the SPICE level-1 models, the level-2 and level-3 model.
	4th	1.8 Flow Circuit design procedures
3rd	1st	1.9 VLSI Design Flow & Y chart
	2nd	1.10 Design Hierarchy
	3rd	1.11 VLSI design styles-FPGA, Gate Array Design,
	4th	Standard cells based, Full custom
4th	1st	Unit-2: Fabrication of MOSFET (10) 2.1 Simplified process sequence for fabrication
	2nd	2.2 Basic steps in Fabrication processes Flow
	3rd	2.3 Fabrication process of nMOS Transistor
	4th	2.4 CMOS n-well Fabrication Process Flow
5th	1st	2.5 MOS Fabrication process by n-well on p-substrate
	2nd	2.6 CMOS Fabrication process by P-well on n-substrate
	3rd	2.7 Layout Design rules
	4th	2.8 Stick Diagrams of CMOS inverter
6th	1st	Unit-3:MOS Inverter(09) 3.1 Basic nMOS inverters,
	2nd	3.2 Working of Resistive-load Inverter
	3rd	3.3 Inverter with n-Type MOSFET Load – Enhancement Load,
	4th	Depletion n-MOS inverter
7th	1st	3.4 CMOS inverter – circuit operation and :
	2nd	characteristics and interconnect effects Delay time definitions
	3rd	3.5 CMOS Inventor design with delay constraints Two sample mask lay out for p-type substrate.
	4th	Unit-4: Static Combinational, Sequential, Dynamics logic circuits & Memories(15) 4.1 Define Static Combinational logic ,working of Static CMOS logic circuits (Two-input NAND Gate)
8th	1st	4.2 CMOS logic circuits (NAND2 Gate)
	2nd	4.3 CMOS Transmission Gates(Pass gate)
	3rd	4.4 Complex Logic Circuits - Basics
	4th	4.5 Classification of Logic circuits based on their temporal behaviour
	1st	Continue
	2nd	4.6 SR Flip latch Circuit,

9 th	3 rd	Continue
	4 th	4.7 Clocked SR latch only.
10 th	1 st	Continue
	2 nd	4.8 CMOS D latch.
	3 rd	4.9 Basic principles of Dynamic Pass Transistor Circuits
	4 th	4.10 Dynamic RAM,
11 th	1 st	SRAM,
	2 nd	4.11 Flash memory
	3 rd	Unit-5: System Design method & synthesis (04) 5.1 Design Language (SPL & HDL)& HDL & EDA tools & VHDL and packages Xilinx
	4 th	5.2 Design strategies & concept of FPGA with standard cell based design
12 th	1 st	5.3 VHDL for design synthesis using CPLD or FPGA
	2 nd	5.4 Raspberry Pi - Basic idea
	3 rd	Unit-6: Introduction to Embedded Systems(10) 6.1 Embedded Systems Overview,list of embedded systems,characteristics ,example – A Digital Camera
	4 th	Continue
13 th	1 st	6.2 Embedded Systems Technologies--Technology – Definition. - Technology for Embedded Systems
	2 nd	Continue
	3 rd	Continue
	4 th	Processor Technology, IC Technology
14 th	1 st	6.3 Design Technology-Processor Technology,General Purpose Processors – Software,
	2 nd	Continue
	3 rd	Continue
	4 th	Basic Architecture of Single Purpose Processors – Hardware
15 th		PUJA HOLIDAY
16 th	1 st	6.4 Application – Specific Processors, Microcontrollers, Digital Signal Processors(DSP)
	2 nd	Continue
	3 rd	Continue
	4 th	Continue
17 th	1 st	6.5 IC Technology- Full Custom / VLSI, Semi-Custom ASIC
	2 nd	(Gate Array & Standard Cell), PLD (Programmable Logic Device)
	3 rd	Continue
	4 th	Continue
18 th	1 st	6.6 Basic idea of Arduino micro controller
	2 nd	Continue
	3 rd	Continue
	4 th	Continue
19 TH	1 st	Revision
	2 nd	Revision
	3 rd	Revision
	4 th	Revision

Signature of the Faculty

LESSON PLAN (WINTER-2024)		
Discipline: ETC	Semester:5th	Name of the Teaching Faculty: SOMA DASH
Subject:ANALOG & DIGITAL COMMUNICATION	No of Days /per week class allotted: 5	Semester From date: 01.07.2024 To date: 08.11.2024 No of Weeks:19
Week	Class Day	Theory / Practical Topics
1st	1st	Unit-1: Elements of Communication Systems.(10) 1.1 Communication Process- Concept of Elements of Communication System & its Block diagram
	2nd	1.2 Source of information & Communication Channels.
	3rd	1.3 Classification of Communication systems (Line & Wireless or Radio)
	4th	1.4 Modulation Process, Need of modulation and
	5th	classify modulation process
2nd	1st	1.5 Analog and Digital Signals & its conversion.
	2nd	Continue
	3rd	1.6 Basic concept of Signals &
	4th	Signals classification (Analog and Digital)
	5th	1.7 Bandwidth limitation
3rd	1st	Unit-2: Amplitude (linear) Modulation System (15) 2.1 Amplitude modulation & derive the expression for amplitude modulation signal,
	2nd	power relation in AM wave & find Modulation Index.
	3rd	2.2 Generation of Amplitude Modulation(AM)- Linear level AM modulation only
	4th	2.3 Demodulation of AM waves (liner diode detector, square law detector & PLL)
	5th	Continue
4th	1st	2.4 Explain SSB signal and
	2nd	DSBSC signal
	3rd	2.5 Methods of generating & detection SSB-SC signal (Indirect method only)
	4th	Continue
	5th	2.6 Methods of generation DSB-SC signal (Ring Modulator) and
5th	1st	detection of DSB-SC signal (Synchronous detection)
	2nd	2.7 Concept of Balanced modulators
	3rd	2.8 Vestigial Side Band Modulation
	4th	Unit-3: Angle Modulation Systems(10) 3.1 Concept of Angle modulation & its types (PM & FM)
	5th	3.2 Basic principle of Frequency Modulation & Frequency Spectrum of FM Signal.
6th	1st	3.3 Expression for Frequency Modulated Signal & Modulation Index and sideband of FM signal
	2nd	Continue
	3rd	3.4 Explain Phase modulation & difference of FM & PM)- working principle with Block Diagram
	4th	3.5 Compare between AM and FM modulation (Advantages & Disadvantages)
	5th	3.6 Methods of FM Generation (Indirect (Armstrong) method only) working principle with Block Diagram
7th	1st	3.7 Methods of FM Demodulator or detector (Forster-Seely & Ratio detector)- working principle with Block Diagram
	2nd	Continue
	3rd	Unit-4: AM & FM TRANSMITTER & RECEIVER(08) 4.1 Classification of Radio Receivers

	4th	4.2 Define the terms Selectivity, Sensitivity, Fidelity and Noise Figure
	5th	4.3 AM transmitter - working principle with Block Diagram
8th	1st	Continue
	2nd	Continue
	3rd	4.5 Working of super heterodyne radio receiver with Block diagram
		4.6 Working of FM Transmitter & Receiver with Block Diagram.
	4th	Unit-5: ANALOG TO DIGITAL CONVERSION & PULSE MODULATION SYSTEM.(17) 5.1 Concept of Sampling Theorem , Nyquist rate & Aliasing
9th	1st	5.2 Sampling Techniques (Instantaneous, Natural, Flat Top)
	2nd	5.3 Analog Pulse Modulation - Generation and detection of PAM, PWM & PPM system with the help of Block diagram & comparison of all above.
	3rd	Continue
	4th	Continue
	5th	5.4 Concept of Quantization of signal & Quantization error.
10th	1st	5.5 Generation & Demodulation of PCM system with Block diagram & its applications.
	2nd	Continue
	3rd	5.6 Companding in PCM & Vocoder
	4th	5.7 Time Division Multiplexing & explain the operation with circuit diagram.
	5th	5.8 Generation & demodulation of Delta modulation with Block diagram.
11th	1st	Continue
	2nd	5.9 Generation & demodulation of DPCM with Block diagram.
	3rd	Continue
	4th	5.10 Comparison between PCM, DM , ADM & DPCM
	5th	Continue
12th	1st	Unit-6: DIGITAL MODULATION TECHNIQUES(15) 6.1 Concept of Multiplexing (FDM & TDM)- (Basic concept , Transmitter & Receiver) & Digital modulation formats.
	2nd	Continue
	3rd	6.2 Advantages of digital communication system over Analog system
	4th	6.3 Digital modulation techniques & types.
	5th	Continue
13th	1st	6.4 Generation and Detection of binary ASK, FSK, PSK, QPSK, QAM, MSK, GMSK.
	2nd	Continue
	3rd	Continue
	4th	Continue
	5th	Continue
14th	1st	6.5 Working of T1-Carrier system.
	2nd	Continue
	3rd	6.6 Spread Spectrum & its applications
	4th	Continue
	5th	6.7 Working operation of Spread Spectrum Modulation Techniques (DS-SS & FH-SS).
15th		
		PUJA VACATION
	1st	Continue

16th	2nd	Continue
	3rd	Continue
	4th	6.8 Define bit, Baud, symbol & channel capacity formula.(Shannon Theorems)
	5th	Continue
17th	1st	Continue
	2nd	6.9 Application of Different Modulation Schemes.
	3rd	Continue
	4th	Continue
	5th	6.10 Types of Modem & its Application
18th	1st	Revision
	2nd	Revision
	3rd	Revision
	4th	Revision
	5th	Revision
19 TH	1st	Revision
	2nd	Revision
	3rd	Revision
	4th	Revision
	5th	Revision

Signature of the Faculty

LESSON PLAN (Winter-2024)

Discipline: ETC	Semester: 3rd	Name of the Teaching Faculty: SOMA DASH
Subject: Environmental Studies	No of Days /per week class allotted: 4	Semester From date: 01.07.2024 To 08.11.2024 No of Weeks:19
Week	Class Day	Theory Topics
1st	1st	1. The Multidisciplinary nature of environmental studies:(04) 1.1 Definition, scope and importance.
	2nd	1.1 Definition, scope and importance.
	3rd	1.2 Need for public awareness.
	4th	1.2 Need for public awareness.
2nd	1st	2. Natural Resources: Renewable and nonrenewable resources(08) 2.1 Natural resources and associated problems. 2.1.1. Forest resources: Use and over-exploitation, deforestation,
	2nd	case studies, Timber extraction mining, dams and their effects on forests and tribal people.
	3rd	2.1.2. Water resources: Use and over-utilization of surface and ground water,
	4th	floods, drought, conflicts over water, dam's benefits and problems.
3rd	1st	2.1.3. Mineral Resources: Use and exploitation, environmental effects of extracting and using mineral resources.
	2nd	2.1.4. Food Resources: World food problems, changes caused by agriculture and over grazing,
	3rd	effects of modern agriculture, fertilizers- pesticides problems, water logging, salinity.
	4th	2.1.5. Energy Resources: Growing energy need, renewable and non-renewable energy sources, use of alternate energy sources, case studies.
4th	1st	2.1.6. Land Resources: Land as a resource, land degradation, man induces landslides, soil erosion, and desertification.
	2nd	2.2 Role of individual in conservation of natural resources. 2.3 Equitable use of resources for sustainable life styles.
	3rd	3. Systems:(08) 3.1. Concept of an eco system. 3.2. Structure and function of an eco system.
	4th	3.3. Producers, consumers, decomposers.
5th	1st	3.4. Energy flow in the eco systems.
	2nd	3.5. Ecological succession.
	3rd	3.6. Food chains, food webs and ecological pyramids.
	4th	3.7. Introduction, types, characteristic features, structure and function of the following eco system:
6th	1st	3.8. Forest ecosystem:
	2nd	3.9. Aquatic eco systems (ponds, streams, lakes, rivers, oceans, estuaries)
	3rd	4. Biodiversity and it's Conservation:(08) 4.1. Introduction-Definition: genetics,
	4th	species and ecosystem diversity.
7th	1st	4.2. Biogeographically classification of India.
	2nd	4.3. Value of biodiversity: consumptive use, productive use,
	3rd	social ethical, aesthetic and optin values.
	4th	4.4. Biodiversity at global, national and local level.

8th	1st	4.5. Threats to biodiversity: Habitats loss,
	2nd	poaching of wild life, man wildlife conflicts.
	3rd	5. Environmental Pollution:(12) 5.1. Definition Causes, effects and control measures of:
	4th	5.1.1 Air pollution.
9th	1st	5.1.2 Water pollution.
	2nd	5.1.3 Soil pollution
	3rd	5.1.4 Marine pollution
	4th	5.1.5 Noise pollution.
10th	1st	5.1.6 Thermal pollution
	2nd	5.1.7 Nuclear hazards.
	3rd	5.2. Solid waste Management: Causes, effects and
	4th	control measures of urban and industrial wastes.
11th	1st	5.3. Role of an individual in prevention of pollution.
	2nd	5.4. Disaster management: Floods, earth quake, cyclone and landslides.
	3rd	6. Social issues and the Environment:(10) 6.1. Form unsustainable to sustainable development.
	4th	6.2. Urban problems related to energy.
12th	1st	6.3. Water conservation
	2nd	rain water harvesting, water shed management.
	3rd	6.4. Resettlement and rehabilitation of people; its problems
	4th	Resettlement and rehabilitation of people; its concern.
13th	1st	6.5. Environmental ethics: issue .
	2nd	6.5. Environmental ethics: possible solutions.
	3rd	6.6. Climate change, global warming,
	4th	acid rain, ozone layer depletion,
14th	1st	nuclear accidents and holocaust, case studies.
	2nd	6.7. Air (prevention and control of pollution) Act.
	3rd	6.8. Water (prevention and control of pollution) Act.
	4th	6.9. Public awareness.
15 TH		PUJA VACATION
16th	1st	7. Human population and the environment:(08) 7.1. Population growth
	2nd	and variation among nations.
	3rd	7.2. Population explosion- family welfare program.
	4th	7.3. Environment
17th	1st	and human health.
	2nd	7.4. Human rights.
	3rd	7.5. Value education
	4th	7.6. Role of information technology
18th	1st	Role of information technology in environment
	2nd	and human health.
	3rd	Revision
	4th	Revision
19 TH	1st	Revision
	2nd	Revision
	3rd	Revision
	4th	Revision

Signature of the Faculty