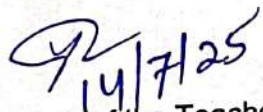


**GOVT. POLYTECHNIC KENDRAPARA**  
**LESSON PLAN**  
**Session(2024-2025)**

<b>Discipline:</b> Electronics & Telecommunication Engineering		<b>Semester:</b> 5 <sup>th</sup> Winter/2025	<b>Name of the Faculty:</b> JOGESWAR NAIK (LECTURER STAGE-II)
<b>Subject:</b> VLSI & Embedded System, Theory-2		<b>No. of Days/week:</b> 04	<b>Start Date:</b> 14/07/2025 <b>End Date:</b> 15/11/2025
SL NO	Week	Class Day	Theory Topics
1	1st week (14th July to 19th July 2025)	1st	<b>Unit-1: Introduction to VLSI &amp; MOS Transistor, Historical</b> 1.1 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
2	2nd week (21th July to 25th July 2025)	1st	1.5 MOSFET V-I characteristics,
		2nd	1.6 Working of MOSFET capacitances
		3rd	1.7 Modeling 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
3	3rd week (28th July to 02nd Aug 2025)	1st	1.9VLSI Design Flow & Y chart
		2nd	1.10 Design Hierarchy
		3dr	1.11VLSI design styles-FPGA.
		4th	1.11 Gate Array Design, Standard cells based design, Full custom Design.
4	4th week (04th Aug to 8th Aug 2025)	1st	<b>Unit-2: Fabrication of MOSFET</b>
		2nd	2.1 Simplified process sequence for fabrication
		3dr	2.2 Basic steps in Fabrication processes Flow
		4th	2.3 Fabrication process of nMOS Transistor
5	5th week (11th Aug to 16th Aug 2025)	1st	2.4 CMOS n-well Fabrication Process Flow
		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
6	6th week (18th Aug to 26th Aug 2025)	1st	2.8 Stick Diagrams of CMOS inverter
		2nd	<b>MOS Inverter</b>
		3rd	<b>3.1Basic nMOS inverters.</b>
		4th	3.2Working of Resistive-load Inverter
7	7th week (29th Aug to 06th Sept 2025)	1st	3.3 Inverter with n-Type MOSFET Load Enhancement Load, Depletion n-MOS inverter
		2nd	3.4 CMOS inverter circuit operation and characteristics
		3rd	3.4 Interconnect effects Delay time definitions
		4th	3.4 Interconnect effects Delay time definitions
		1st	3.5CMOS Inventor design with delay constraints Two sample mask lay out for p-type substrate

	8th week (08st Sept to 12th Sept 2025)	2nd	3.5CMOS Inventor design with delay constraints Two sample mask lay out for p-type substrate
		3rd	<b>Static Combinational, Sequential, Dynamics logic circuits &amp; Memories, 4.1 Define Static Combinational logic</b>
		4th	4.1 Working of Static CMOS, logic circuits (Two-input NAND Gate)
		1st	4.2 CMOS logic circuits ( NAND2 Gate)
9	9th week (15th Sept to 20th Sept 2025)	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 behavior
		1st	4.6 SR Flip latch Circuit
10	10th week (22nd Sept to 26th Sept 2025)	2nd	4.7 Clocked SR latch only
		3rd	4.8 CMOS D latch
		4th	4.9 Basic principles of Dynamic Pass Transistor Circuits
		1st	4.1 Dynamic RAM, SRAM
11	11th week (3rd oct to 10th oct 2025)	2nd	4.11 Flash memory
		3rd	<b>System Design method &amp; synthesis, 5.1 Design Language (SPL &amp; HDL)&amp; HDL &amp; EDA tools</b>
		4th	5.1 VHDL and packages Xylinx
		1st	5.2 Design strategies & concept of FPGA with standard cell based
12	12th week (13th oct to 18th oct 2025)	2nd	5.3 VHDL for design synthesis using CPLD or FPGA
		3rd	5.4 Raspberry Pi - Basic idea
		4th	5.4 Raspberry Pi - Basic idea
		1st	<b>Introduction to Embedded Systems, 6.1 Embedded Systems Overview, list of embedded systems, characteristics</b>
13	13th week (20th oct to 31th oct 2025)	2nd	6.1 A Digital Camera
		3rd	6.2 Embedded Systems Technologies--Technology Definition - Technology for Embedded Systems -Processor Technology - IC Technology
		4th	6.3 Design Technology-Processor Technology, General Purpose Processors
		1st	6.4 Application Specific Processors, Microcontrollers, Digital Signal Processors(DSP)
14	14th week (01st Nov to 07th Nov)	2nd	6.5 IC Technology- Full Custom
		3rd	6.5 VLSI, Semi-Custom ASIC (Gate Array & Standard Cell)
		4th	6.5 PLD (Programmable Logic Device)
		1st	6.5 PLD (Programmable Logic Device)
15	15th week (10th Nov to 15th Nov)	2nd	6.6 Basic idea of Arduino micro controller
		3rd	6.6 Basic idea of Arduino micro controller
		4th	6.6 Basic idea of Arduino micro controller
		4th	6.6 Basic idea of Arduino micro controller

  
 14/7/25  
 Signature of the Teacher

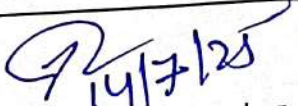
# GOVT. POLYTECHNIC KENDRAPARA

## LESSON PLAN

### Session(2025-2026)

	Discipline: ETC	Semester-5th Winter-2025	Name of the Teaching Faculty: JOGESWAR NAIK(LECTURER STAGE-II)
Sl. No.	Subject-Th.5. (Wave propagation & Broadband communication engg.)	No. Of Days/Week class allotted:04	Start Date: 14/07/2025 End Date: 15/11/2025 No. of Weeks-15 WEEKS
	Weeks/Months	Class Day	Topic
1	1st week (14th July to 19th July 2025)	1st	1.1 Effects of environments such as reflection, refraction, interference, diffraction, absorption and attenuation (Definition only)
		2nd	1.1 Effects of environments such as reflection, refraction, interference, diffraction, absorption and attenuation (Definition only)
		3rd	1.2 Classification based on Modes of Propagation-Ground wave, Ionosphere, Sky wave propagation, Space wave propagation
		4th	1.3 Definition – critical frequency, max. useable frequency, skip distance, fading, Duct propagation & Troposphere scatter propagation actual height and virtual height
2	2nd week (21th July to 25th July 2025)	1st	1.3 Definition – critical frequency, max. useable frequency, skip distance, fading, Duct propagation & Troposphere scatter propagation actual height and virtual height
		2nd	1.4 Radiation mechanism of an antenna-Maxwell equation.
		3rd	1.5 Definition - Antenna gains, Directive gain, Directivity, effective aperture, polarization, input impedance, efficiency, Radiator
		4th	1.5 Radiator resistance, Bandwidth, Beam width, Radiation pattern
3	3rd week (28th July to 02nd Aug 2025)	1st	1.6 Antenna -types of antenna: Mono pole and dipole antenna and omni directional antenna
		2nd	1.7 Operation of following antenna with advantage & applications. a) Directional high frequency antenna : , Yagi & Rohmbus only
		3rd	1.8 Basic Concepts of Smart Antennas- Concept and benefits of smart antennas
		4th	Unit-2: TRANSMISSION LINES.
4	4th week (04th Aug to 8th Aug 2025)	1st	2.1 Fundamentals of transmission line.
		2nd	2.2 Equivalent circuit of transmission line & RF equivalent circuit
		3rd	2.3 Characteristics impedance, methods of calculations & simple numerical.
		4th	2.4 Losses in transmission line.
5	5th week (11th Aug to 16th Aug 2025)	1st	2.5 Standing wave – SWR, VSWR, Reflection coefficient, simple numerical.
		2nd	2.6 Quarter wave & half wavelength line
		3rd	2.7 Impedance matching & Stubs – single & double
		4th	2.8 Primary & secondary constant of X-mission line.
6	6th week (18th Aug to 26th Aug 2025)	1st	Unit-3: TELEVISION ENGINEERING.
		3rd	2.3 Understand need of freewheeling diode.
		3rd	2.4 Working of single phase fully controlled converter with resistive and R-L loads.
		4th	2.5 Working of three-phase half wave controlled converter with Resistive load
7	7th week (29th Aug to 06th Sept 2025)	1st	2.6 Working of three phase fully controlled converter with resistive load.
		2nd	2.7 Working of single phase AC regulator.
		3rd	2.8 Working principle of step up & step down chopper.

8th week (08st Sept to 12th Sept 2025)	4th	2.9 Control modes of chopper
	1st	2.10 Operation of chopper in all four quadrants.
	2nd	3. UNDERSTAND THE INVERTERS AND CYCLO-CONVERTERS 3.1 Classify inverters.
	3rd	3.1 Define-Aspect ratio, Rectangular Switching, Flicker,
9th week (15th Sept to 20th Sept 2025)	4th	3.1 Horizontal Resolution, Video bandwidth, Interlaced scanning, Composite video signal, Synchronization pulseser
	1st	3.2 TV Transmitter – Block diagram & function of each block.
	2nd	3.3 Monochrome TV Receiver -Block diagram & function of each block.
	3rd	3.5 Types of Televisions by Technology- cathode-ray tube TVs, Plasma Display Panels, Digital Light Processing (DLP),
10th week (22nd Sept to 26th Sept 2025)	4th	3.5 Liquid Crystal Display (LCD), Organic Light-Emitting Diode (OLED) Display, Quantum
	1st	3.5 Light-Emitting Diode (QLED) – only Comparison based on application
	2nd	3.6 Discuss the principle of operation - LCD display, Large Screen Display..
	3rd	3.7 CATV systems & Types & networks
11th week (3rd oct to 10th oct 2025)	4th	3.8 Digital TV Technology-Digital TV Signals, Transmission of digital TV signals & Digital TV receiver Video programme processor unit.
	1st	Unit-4: MICROWAVE ENGINEERING.
	2nd	4.1 Define Microwave Wave Guides.
	3rd	4.2 Operation of rectangular wave gives and its advantage.
12th week (13th oct to 18th oct 2025)	4th	4.3 Propagation of EM wave through wave guide with TE & TM modes.
	1st	4.4 Circular wave guide.
	2nd	4.5 Operational Cavity resonator.
	3rd	4.6 Working of Directional coupler, Isolators & Circulator.
13th week (20th oct to 31th oct 2025)	4th	4.7 Microwave tubes-Principle of operational of two Cavity Klystron.
	1st	4.8 Principle of Operations of Travelling Wave Tubes
	2nd	4.9 Principle of Operations of Cyclotron
	3rd	4.10 Principle of Operations of Tunnel Diode & Gunn diode
14th week (01st Nov to 07th Nov)	4th	5.6 Description of contacts and coils in the following states i) Normally open ii) Normally closed iii) Energized output iv) latched Output v) branching
	1st	Unit-5: Broadband communication
	2nd	5.1 Broadband communication system-Fundamental of
	3rd	5.1 Components and Network architecture
15th week (10th Nov to 15th Nov)	3rd	5.1 Components and Network architecture
	4th	5.2 Importance & future of broadband telecommunication internet based network.
	1st	5.2 Importance & future of broadband telecommunication internet based network.
	2nd	5.2 Importance & future of broadband telecommunication internet based network.
15th week (10th Nov to 15th Nov)	3rd	5.3 SONET(Synchronous Optical Network)-Signal frame components topologies advantages applications, and disadvantages
	3rd	5.4 ISDN - ISDN Devices interfaces, services, Architecture, applications,
	4th	5.5 BISDN -interfaces & Terminals, protocol architecture applications

  
 Signature of the Teacher