LESSON PLAN FOR SESSION: 2025-26			
DISCIPLINE		SEMESTER	NAME OF THE TEACHING FACULTY
MECHANICAL ENGG. & CIVIL ENGG.		1ST	Mrs MANORAMA PADHY, LEC (EL & EC)
SUBJECT: FUNDAMENTALS OF ELECTRICAL & ELECTRONICS LAB (PR-4A)		NO. OF DAYS PER WEEK CLASS ALLOTED : 01	SEMESTER FROM 06/08/2025 TO 04/12/2025
			NO. OF WEEKS : 15 NOS.
WEEKS	CLASS DAYS	THEORY TOPICS	
1ST WEEK	1ST	Identify various passive and active electronics components	
2ND WEEK	1ST	Identify various passive and active electronics components, with Lab record and rubrics	
3RD WEEK	1ST	Connect resistors in series and parallel combination and measure its value using digital multimeter	
4TH WEEK	1ST	Explain the Series and Parallel connection of resistors	
5TH WEEK	1ST	Do the experiment by using theoritical method and also do it by using digital multimeter, with Lab record and rubrics	
6TH WEEK	1ST	Connect capacitors in series and parallel combination and measure its value using multimeter	
7TH WEEK	1ST	Explain the Series and Parallel connection of capacitors	
8TH WEEK	1ST	Do the experiment by using theoritical method and also do it by using digital multimeter, with Lab record and rubrics	
9TH WEEK	1ST	Use multimeter to measure the value of given resistor and determine the value to confirm with colour code, with Lab record and rubrics	
10TH WEEK	1ST	Test the PN-junction diode using digital multimeter, with Lab record and rubrics	
11TH WEEK	1ST	Test the LED using digital multimeter	
12TH WEEK	1ST	Test the performance of PN-junction diode	
13TH WEEK	1ST	Test the performance of Zener diode	
14TH WEEK	1ST	Identify three terminals of a transistor using digital multimeter, with Lab record and rubrics	
15TH WEEK	1ST	Test the performance of NPN transistor,with lab record and rubrics	

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LESSON PLAN FOR SESSION:2025-26

DISCIPLINE	SEMESTER	NAME OF THE TEACHING FACULTY
ETC ENGG.	5TH	MRS MANORAMA PADHY,LECT(E&TC)
SUBJECT: VLSI & EMBEDDED SYSTEM LAB (PR-2)	NO. OF DAYS PER WEEK CLASS ALLOTED : 03	SEMESTER FROM 14/07/2025 TO 15/11/2025
		NO. OF WEEKS : 15 NOS.

WEEKS	CLASS DAYS	THEORY TOPICS
1ST WEEK	1ST	Develop a VHDL test bench code for testing following and implement on FPGA kit (Addition, Subtraction, Multiplication, Division)
	2ND	Develop a VHDL test bench code for testing following and implement on FPGA kit (Addition, Subtraction, Multiplication,Division)
	3RD	Develop a VHDL test bench code for testing following and implement on FPGA kit(Addition, Subtraction, Multiplication,Division), with lab record and rubrics
2ND WEEK	1ST	Develop a VHDL test bench code for testing following and implement on FPGA kit(8 Bit Digital output using LEDs, 8 Bit Digital inputs using)
	2ND	Develop a VHDL test bench code for testing following and implement on FPGA kit(8 Bit Digital output using LEDs, 8 Bit Digital inputs using)
	3RD	Develop a VHDL test bench code for testing following and implement on FPGA kit(8 Bit Digital output using LEDs, 8 Bit Digital inputs using), with lab record and rubrics
3RD WEEK	1ST	Develop a VHDL test bench code for testing 4 x 4 matrix keypad interface. a. Write a VHDL Code forRelay interface, b. Buzzer Interface
	2ND	Develop a VHDL test bench code for testing 4 x 4 matrix keypad interface. a. Write a VHDL Code forRelay interface, b. Buzzer Interface
	3RD	Develop a VHDL test bench code for testing 4 x 4 matrix keypad interface. a. Write a VHDL Code forRelay interface, b. Buzzer Interface, with lab record and rubrics
4TH WEEK	1ST	Develop a VHDL test bench code for testing 7 segment LED display interface.
	2ND	Develop a VHDL test bench code for testing 7 segment LED display interface.
	3RD	Develop a VHDL test bench code for testing 7 segment LED display interface, with lab record and rubrics
5TH WEEK	1ST	Develop a VHDL test bench code for testing Stepper motor interface.
	2ND	Develop a VHDL test bench code for testing Stepper motor interface.
	3RD	Develop a VHDL test bench code for testing Stepper motor interface, with lab record and rubrics
6TH WEEK	1ST	Develop a VHDL test bench code for testing Traffic light control.
	2ND	Develop a VHDL test bench code for testing Traffic light control.
	3RD	Develop a VHDL test bench code for testing Traffic light control, with lab record and rubrics
7TH WEEK	1ST	Develop a VHDL test bench code for testing 4 bit binary counter and study all using simulation software.
	2ND	Develop a VHDL test bench code for testing 4 bit binary counter and study all using simulation software.
	3RD	Develop a VHDL test bench code for testing 4 bit binary counter and study all using simulation software, with lab record and rubrics
8TH WEEK	1ST	Develop a VHDL test bench code for testing LCD display to display a text message.
	2ND	Develop a VHDL test bench code for testing LCD display to display a text message.

	3RD	Develop a VHDL test bench code for testing LCD display to display a text message, with lab record and rubrics
9TH WEEK	1ST	Develop a VHDL test bench code for testing any one of the simple gate Simulate the test bench code in the HDL software.
	2ND	Develop a VHDL test bench code for testing any one of the simple gate Simulate the test bench code in the HDL software.
	3RD	Develop a VHDL test bench code for testing any one of the simple gate Simulate the test bench code in the HDL software, with lab record and rubrics
10TH WEEK	1ST	Develop a VHDL test bench code & implement of FPGA kit for MUX & DEMUX.
	2ND	Develop a VHDL test bench code & implement of FPGA kit for MUX & DEMUX.
	3RD	Develop a VHDL test bench code & implement of FPGA kit for MUX & DEMUX, with lab record and rubrics
11TH WEEK	1ST	Develop a VHDL test bench code & implement of FPGA kit for Encoder, Decoder & Shift Register.
	2ND	Develop a VHDL test bench code & implement of FPGA kit for Encoder, Decoder & Shift Register.
	3RD	Develop a VHDL test bench code & implement of FPGA kit for Encoder, Decoder & Shift Register, with lab record and rubrics
12TH WEEK	1ST	Design and develop a seven segment decoder in VHDL. Design and develop a 4 bit BCD counter, the output of the counter is given to seven segment decoder. A seven segment display is connected to the output of the decoder. The display shows 0,1, 2.. 9 for every one second
	2ND	Design and develop a seven segment decoder in VHDL. Design and develop a 4 bit BCD counter, the output of the counter is given to seven segment decoder. A seven segment display is connected to the output of the decoder. The display shows 0,1, 2.. 9 for every one second
	3RD	Design and develop a seven segment decoder in VHDL. Design and develop a 4 bit BCD counter, the output of the counter is given to seven segment decoder. A seven segment display is connected to the output of the decoder. The display shows 0,1, 2.. 9 for every one second, with lab record and rubrics
13TH WEEK	1ST	VLSI Design using VHDL (Any TWO) 1. layout of CMOs NAND or NOR gate 2. Design & implementation of Half Adder & Full adder 3. Design & implementation of Latch circuit 4. Design & implementation of SR Flip Flop 5. Design & implementation of D Flop 6. Design of Memory Circuit
	2ND	VLSI Design using VHDL (Any TWO) 1. layout of CMOs NAND or NOR gate 2. Design & implementation of Half Adder & Full adder 3. Design & implementation of Latch circuit 4. Design & implementation of SR Flip Flop 5. Design & implementation of D Flop 6. Design of Memory Circuit
	3RD	VLSI Design using VHDL (Any TWO) 1. layout of CMOs NAND or NOR gate 2. Design & implementation of Half Adder & Full adder 3. Design & implementation of Latch circuit 4. Design & implementation of SR Flip Flop 5. Design & implementation of D Flop 6. Design of Memory Circuit, with lab record and rubrics
	1ST	EMBEDDED SYSTEM: HANDS ON EXERCISE (Any Two) . 1. To Study and Implement Multitasking. Write a Simple Program with Two Separate LED Blinking Tasks. 2. Interface a Stepper motor and control the speed of rotation by implementing RTOS delay functions. 3. Interface bugger sound 4. Interface Traffic light Systems 5. Interface RTOS chips & conduct few experiments

14TH WEEK	2ND	EMBEDDED SYSTEM: HANDS ON EXERCISE (Any Two) . 1. To Study and Implement Multitasking. Write a Simple Program with Two Separate LED Blinking Tasks. 2. Interface a Stepper motor and control the speed of rotation by implementing RTOS delay functions. 3. Interface bugger sound 4. Interface Traffic light Systems 5. Interface RTOS chips & conduct few experiments
	3RD	EMBEDDED SYSTEM: HANDS ON EXERCISE (Any Two) . 1. To Study and Implement Multitasking. Write a Simple Program with Two Separate LED Blinking Tasks. 2. Interface a Stepper motor and control the speed of rotation by implementing RTOS delay functions. 3. Interface bugger sound 4. Interface Traffic light Systems 5. Interface RTOS chips & conduct few experiments
15TH WEEK	1ST	EMBEDDED SYSTEM: HANDS ON EXERCISE (Any Two) . 1. To Study and Implement Multitasking. Write a Simple Program with Two Separate LED Blinking Tasks. 2. Interface a Stepper motor and control the speed of rotation by implementing RTOS delay functions. 3. Interface bugger sound 4. Interface Traffic light Systems 5. Interface RTOS chips & conduct few experiments
	2ND	EMBEDDED SYSTEM: HANDS ON EXERCISE (Any Two) . 1. To Study and Implement Multitasking. Write a Simple Program with Two Separate LED Blinking Tasks. 2. Interface a Stepper motor and control the speed of rotation by implementing RTOS delay functions. 3. Interface bugger sound 4. Interface Traffic light Systems 5. Interface RTOS chips & conduct few experiments
	3RD	EMBEDDED SYSTEM: HANDS ON EXERCISE (Any Two) . 1. To Study and Implement Multitasking. Write a Simple Program with Two Separate LED Blinking Tasks. 2. Interface a Stepper motor and control the speed of rotation by implementing RTOS delay functions. 3. Interface bugger sound 4. Interface Traffic light Systems 5. Interface RTOS chips & conduct few experiments, with lab record and rubrics

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LESSON PLAN FOR SESSION:2025-26

DISCIPLINE	SEMESTER	NAME OF THE TEACHING FACULTY
ETC ENGG.	3RD	MRS MANORAMA PADHY,ETC(E&TC)
SUBJECT: ELECTRONICS DEVICES (TH-2)	NO. OF DAYS PER WEEK CLASS ALLOTED : 03	SEMESTER FROM 14/07/2025 TO 15/11/2025 NO. OF WEEKS : 15 NOS.

WEEKS	CLASS DAYS	UNITS	THEORY TOPICS
1ST WEEK	1ST	UNIT-1: Introduction to Semiconductor Physics	Review of Quantum Mechanics, Electrons in periodic Lattices
	2ND		Energy bands in intrinsic and extrinsic silicon
	3RD		Carrier transport: Diffusion current, Drift current,Mobility and resistivity
2ND WEEK	1ST	UNIT-2: P-N Junction Diodes	Generation and recombination of carriers
	2ND		Poisson and continuity equation
	3RD		Formation of P-N Junction Diodes
3RD WEEK	1ST		Construction & Operating Principle of P-N Junction Diode
	2ND		P-N junction I-V characteristics
	3RD		Small signal switching models
4TH WEEK	1ST		Define breakdown and explain Zener & Avalanche breakdown
	2ND		Construction & Operating Principle of Zener diode
	3RD		Construction & Operating Principle of Schottky diode & LED
5TH WEEK	1ST		Construction & Operating Principle of Photodiode and solar cell
	2ND	UNIT-3: Bipolar Junction Transistor (BJT)	Construction of BJT, Operating Principle of BJT & Types of BJT
	3RD		Working principle of p-n-p and n-p-n BJT
6TH WEEK	1ST		I-V characteristics of BJT & Ebers Moll Model
	2ND		Different types of transistor connection: CommonBase (CB), Common Emitter (CE), Common Collector (CC)
	3RD		Input and output characteristics oftransistor in different connections
7TH WEEK	1ST		Define ALPHA, BETA and GAMMA oftransistors in various modes.
	2ND		Establish the Mathematicalrelationship between ALPHA, BETA and GAMMA
	3RD		Basic concept of Biasing & Types of Biasing
8TH WEEK	1ST		h-parameter model of BJT
	2ND		Load line and determine the Q point.
	3RD		Types of Coupling & Working principle and use of R-C Coupled Amplifier
9TH WEEK	1ST		Frequency Responses of R-C coupled Amplifier
	2ND	UNIT-4: FIELD EFFECT TRANSISTOR (FET)	FET & its classifications
	3RD		Differentiate between JFET & BJT
10TH WEEK	1ST		Construction, working principle & characteristics of JFET
	2ND		Parameters of JFET & establish relation among JFET parameters & JFET as an amplifier
	3RD		Construction and working principle of MOSFT
11TH WEEK	1ST		Classification of MOSFT
	2ND		Characteristics (Drain & Transfer) of MOSFT
	3RD		Explain the operation of CMOS, VMOS & LDMOS
12TH WEEK	1ST	UNIT-5: FEED BACK AMPLIFIER & OSCILLATOR	Define & classify Feedback Amplifier
	2ND		Types of feedback – negative &positive feedback
	3RD		Characteristics voltage gain, bandwidth, input Impedance output impedance, stability, noise and distortion in amplifiers
13TH WEEK	1ST		Oscillator:Block diagram of sine wave oscillator
	2ND		Types Requirement of oscillation
	3RD		Barkhausen criterion & LC oscillators
14TH WEEK	1ST		Colpitts Oscillators:CIRCUIT OPERATION, CIRCUIT DIAGRAM, EQUATION FOR FREQUENCY OF OSCILLATION & FREQUENCY STABILITY
	2ND		Hartley Oscillators:CIRCUIT OPERATION, CIRCUIT DIAGRAM, EQUATION FOR FREQUENCY OF OSCILLATION & FREQUENCY STABILITY
	3RD		Wien Bridge Oscillators:CIRCUIT OPERATION, CIRCUIT DIAGRAM, EQUATION FOR FREQUENCY OF OSCILLATION & FREQUENCY STABILITY

	1ST	UNIT-6: Integrated Circuit Fabrication Process	Explain different fabrication process of Integrated circuit: Oxidation, Diffusion, Ion implantation
	2ND		Explain Photo-lithography, Etching, Chemical vapor deposition
	3RD		Explain Sputtering, Twin-tub CMOS process

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LESSON PLAN FOR SESSION:2025-26

DISCIPLINE	SEMESTER	NAME OF THE TEACHING FACULTY
ETC ENGG.	3RD	MRS MANORAMA PADHY,LECT(E&TC)
SUBJECT: ELECTRONICS DEVICES LABORATORY (PR-2)	NO. OF DAYS PER WEEK CLASS ALLOTED : 04	SEMESTER FROM 14/07/2025 TO 15/11/2025 NO. OF WEEKS : 15 NOS.

WEEKS	CLASS DAYS	THEORY TOPICS
1ST WEEK	1ST	Characteristics of P-N junction diode
	2ND	Characteristics of P-N junction diode
	3RD	Characteristics of P-N junction diode
	4TH	Characteristics of P-N junction diode, with the lab record and rubrics
2ND WEEK	1ST	Characteristics of Zener diode
	2ND	Characteristics of Zener diode
	3RD	Characteristics of Zener diode
	4TH	Characteristics of Zener diode, with the lab record and rubrics
3RD WEEK	1ST	Input-Output andTransfer characteristics of CE and CC Amplifier
	2ND	Input-Output andTransfer characteristics of CE and CC Amplifier
	3RD	Input-Output andTransfer characteristics of CE and CC Amplifier
	4TH	Input-Output andTransfer characteristics of CE and CC Amplifier, with the lab record and rubrics
4TH WEEK	1ST	Characteristics of Photo-diode and Photo transistor
	2ND	Characteristics of Photo-diode and Photo transistor
	3RD	Characteristics of Photo-diode and Photo transistor
	4TH	Characteristics of Photo-diode and Photo transistor, with the lab record and rubrics
5TH WEEK	1ST	Transfer characteristics of JFET
	2ND	Transfer characteristics of JFET
	3RD	Transfer characteristics of JFET
	4TH	Transfer characteristics of JFET, with the lab record and rubrics
6TH WEEK	1ST	Transfer characteristics of MOSFET (with depletion and enhancement mode)
	2ND	Transfer characteristics of MOSFET (with depletion and enhancement mode)
	3RD	Transfer characteristics of MOSFET (with depletion and enhancement mode)
	4TH	Transfer characteristics of MOSFET (with depletion and enhancement mode), with the lab record and rubrics
7TH WEEK	1ST	Characteristics of LED with three different wavelengths
	2ND	Characteristics of LED with three different wavelengths
	3RD	Characteristics of LED with three different wavelengths
	4TH	Characteristics of LED with three different wavelengths, with the lab record and rubrics
8TH WEEK	1ST	Construct Half wave rectifier and analyse the waveform
	2ND	Construct Half wave rectifier and analyse the waveform
	3RD	Construct Half wave rectifier and analyse the waveform
	4TH	Construct Half wave rectifier and analyse the waveform, with the lab record and rubrics
9TH WEEK	1ST	Constuct Full wave rectifier with 2 diodes and analyse the waveform.
	2ND	Constuct Full wave rectifier with 2 diodes and analyse the waveform.
	3RD	Constuct Full wave rectifier with 2 diodes and analyse the waveform.
	4TH	Constuct Full wave rectifier with 2 diodes and analyse the waveform, with the lab record and rubrics
10TH WEEK	1ST	Construct Full wave rectifier with 4 diodes (Bridge rectifier) and analyse the waveform
	2ND	Construct Full wave rectifier with 4 diodes (Bridge rectifier) and analyse the waveform
	3RD	Construct Full wave rectifier with 4 diodes (Bridge rectifier) and analyse the waveform
	4TH	Construct Full wave rectifier with 4 diodes (Bridge rectifier) and analyse the waveform, with the lab record and rubrics

11TH WEEK	1ST	Construct & Find the gain of (i) Class A Amplifier (ii) Class B Amplifier (iii) Class CTuned Amplifier
	2ND	Construct & Find the gain of (i) Class A Amplifier (ii) Class B Amplifier (iii) Class CTuned Amplifier
	3RD	Construct & Find the gain of (i) Class A Amplifier (ii) Class B Amplifier (iii) Class CTuned Amplifier
	4TH	Construct & Find the gain of (i) Class A Amplifier (ii) Class B Amplifier (iii) Class CTuned Amplifier, with the lab record and rubrics
12TH WEEK	1ST	Construct & test Class B-Push Pull amplifier & observe the wave form
	2ND	Construct & test Class B-Push Pull amplifier & observe the wave form
	3RD	Construct & test Class B-Push Pull amplifier & observe the wave form
	4TH	Construct & test Class B-Push Pull amplifier & observe the wave form, with the lab record and rubrics
13TH WEEK	1ST	Construct & calculate the frequency& Draw the wave formof (i) Hartly Oscillator (ii) Collpit's Oscillator (iii) Wein Bridge Oscillator (iv) R-C phase shift Oscillator
	2ND	Construct & calculate the frequency& Draw the wave formof (i) Hartly Oscillator (ii) Collpit's Oscillator (iii) Wein Bridge Oscillator (iv) R-C phase shift Oscillator
	3RD	Construct & calculate the frequency& Draw the wave formof (i) Hartly Oscillator (ii) Collpit's Oscillator (iii) Wein Bridge Oscillator (iv) R-C phase shift Oscillator
	4TH	Construct & calculate the frequency& Draw the wave formof (i) Hartly Oscillator (ii) Collpit's Oscillator (iii) Wein Bridge Oscillator (iv) R-C phase shift Oscillator, with the lab record and rubrics
14TH WEEK	1ST	Simulation experiments using PSPICE or Multisim.
	2ND	Simulation experiments using PSPICE or Multisim.
	3RD	Simulation experiments using PSPICE or Multisim.
	4TH	Simulation experiments using PSPICE or Multisim, with the lab record and rubrics
15TH WEEK	1ST	Practice the above experiments and submit the complete lab record and do viva voce.
	2ND	Practice the above experiments and submit the complete lab record and do viva voce.
	3RD	Practice the above experiments and submit the complete lab record and do viva voce.
	4TH	Practice the above experiments and submit the complete lab record and do viva voce.

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LESSON PLAN FOR SESSION: 2025-26

DISCIPLINE	SEMESTER	NAME OF THE TEACHING FACULTY
MECHANICAL ENGG.	1ST	MRS MANORAMA PADHY,LECT(E&TC)

SUBJECT: FUNDAMENTALS OF ELECTRICAL & ELECTRONICS ENGG.(TH	NO. OF DAYS PER WEEK CLASS ALLOTED : 04	SEMESTER FROM 06/08/2025 TO 04/12/25
		NO. OF WEEKS : 15 NOS.

WEEKS	CLASS DAYS	UNITS	THEORY TOPICS
1ST WEEK	1ST	UNIT I: Overview of Electronic Components & Signals	Basic Concept of Electronics and its application
	2ND		Basic Concept of voltage, current and power & Electronics components and their classification
	3RD		Explain about passive and active components
	4TH		Define passive components and basic concept of Resistor, Capacitor, Inductor and Transformer
2ND WEEK	1ST		Concept and simple problems of Resistance, Capacitor & Inductor
	2ND		Concept and simple problems of Resistance, Capacitor & Inductor
	3RD		Define Active components and explain some basic concept of Diodes, Transistors, FET, MOS and CMOS
	4TH		Definition, classification and Working of PN junction diode,LED, Zener diode
3RD WEEK	1ST		Definition, classification and Working of transistor,FET
	2ND		Define Signals. Explain basic concept of alternating current and direct current
	3RD		Classification of signals. And definitions of different types of signals. And explain it.
	4TH		Define waveforms and explain the different types of signal waveforms
4TH WEEK	1ST		Definition of average, rms, peak values, amplitude, frequency, time period, wave length of different types of signal waveforms
	2ND		Definition of Ideal/non-ideal voltage/current sources, independent/dependent voltage current sources.
	3RD	UNIT II: Overview of Analog Circuits	Introduction to Operational Amplifiers. Pin configuration of OPAMP
	4TH		Basic concept of Ideal OPAMP & Practical OPAMP
5TH WEEK	1ST		Explain Open loop and closed loop configuration of OPAMP
	2ND		Aplication of OPAMP as ADDER, AMPLIFIER
	3RD		Application of OPAMP as differentiator and integrator
	4TH	UNIT III: Overview of Digital Electronics	Introduction to Boolean Algebra
6TH WEEK	1ST		Electronic implementation of Boolean operation
	2ND		Introduction to Number system and Simple problems og Number system
	3RD		Introduction to Logic gates and explain the Gates-Functional Block Approach
	4TH		Explain the combinational and sequential circuit
7TH WEEK	1ST		Introduction to storage element such as Flip Flop, Counter, Register
	2ND		Explain Functional Block Approach of Flip Flop
	3RD		Introduction to the Functional Block Approach of Ripple counter
	4TH		Introduction to the Functional Block Approach of Up/Down counter
8TH WEEK	1ST		Introduction to the Functional Block Approach of Decade counter
	2ND		Introduction to digital IC gates(of TTL Type)
	3RD	Unit IV: Electric and Magnetic Circuits	Introduction to Basic Principles of Electricity
	4TH		Introduction to Generation,transmission & Distribution
9TH WEEK	1ST		Defination of EMF, Current, Potential Difference, Power and Energy
	2ND		Defination of Resistances, Capacitance, Inductance & ohms law
	3RD		Series and Parallel connection of Resistances, Capacitance, Inductance with Numericals
	4TH		Introduction to Magnetic Circuit & Defination of M.M.F, magnetic force, permeability & susceptibility.
10TH WEEK	1ST		Defination of reluctance, leakage factor and BH curve
	2ND		Description of Hysteresis loop
	3RD		Electromagnetic induction & Faraday's laws of electromagnetic induction
	4TH		Lenz's law; Dynamically induced emf; Statically induced emf

11TH WEEK	1ST		Equations of self and mutual inductance
	2ND		Analogy between electric and magnetic circuits
	3RD	Unit V : A.C. Circuits	Basic terminology : Cycle, Frequency, Periodic time, Amplitude, Angular velocity,
	4TH		RMS value, Average value, Form Factor Peak Factor
12TH WEEK	1ST		Impedance, phase angle, and power factor
	2ND		Mathematical and phasor representation of alternating emf and current
	3RD		Voltage and Current relationship in Star and Delta connections
	4TH		A.C in resistors, inductors circuit
13TH WEEK	1ST		A.C in Capacitive Circuit. A.C in R-L series Circuit
	2ND		R-C series, R-L-C series Circuit
	3RD		A.C in R-L parallel
	4TH		A.C in R-C Parallel, R-L-C Parallel Circuit.
14TH WEEK	1ST		Power in A. C. Circuits, power triangle
	2ND	Unit VI: Transformer and Machines	General construction and principle of Transformer
	3RD		Classification of transformer with construction and pinciple
	4TH		Emf equation transformers
15TH WEEK	1ST		Transformation ratio of transformers
	2ND		Auto transformers
	3RD		Construction and Working principle of DC motors
	4TH		Basic equations and characteristic of motors

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LESSON PLAN FOR SESSION:2025-26

DISCIPLINE	SEMESTER	NAME OF THE TEACHING FACULTY
E&TC Engg	5TH	MRS MANORAMA PADHY,LECT(E&TC)

SUBJECT: VLSI & EMBEDDED SYSTEM(TH-2)	NO. OF DAYS PER WEEK CLASS ALLOTED : 04	SEMESTER FROM 14/07/2025 TO 15/11/2025 NO. OF WEEKS:- 15 NOS.

WEEKS	CLASS DAYS	UNITS	THEORY TOPICS
1ST WEEK	1ST	Unit-1: Introduction to VLSI & MOS Transistor	Historical perspective, Introduction to VLSI
	2ND		Classification of CMOS digital circuit types
	3RD		Introduction to MOS Transistor& Basic operation of MOSFET
	4TH		Structure and operation of MOSFET (n-MOS enhancement type) & COMS
2ND WEEK	1ST		MOSFET V-I characteristics
	2ND		Working of MOSFET capacitances.
	3RD		Modelling of MOS Transistors including Basic concept the SPICE
	4TH		SPICE level-1 models, the level-2 and level-3 model
3RD WEEK	1ST		Flow Circuit design procedures
	2ND		VLSI Design Flow & Y chart
	3RD		Design Hierarchy
	4TH		VLSI design styles-FPGA, Gate Array Design, Standard cells based, Full
4TH WEEK	1ST	Unit-2: Fabrication of MOSFET	Simplified process sequence for fabrication
	2ND		Basic steps in Fabrication processes Flow
	3RD		Fabrication process of nMOS Transistor
	4TH		CMOS n-well Fabrication Process Flow
5TH WEEK	1ST		MOS Fabrication process by n-well on p-substrate
	2nd		MOS Fabrication process by n-well on p-substrate
	3rd		CMOS Fabrication process by P-well on n-substrate
	4th		CMOS Fabrication process by P-well on n-substrate
6TH WEEK	1ST		Layout Design rules
	2nd		Stick Diagrams of CMOS inverter
	3rd	Unit-3: MOS Inverter	Basic nMOS inverters
	4th		Working of Resistive-load Inverter
7TH WEEK	1ST		Inverter with n-Type MOSFET Load
	2nd		Inverter with n-type Enhancement Load
	3rd		Depletion n-MOS inverter
	4th		CMOS inverter circuit operation and characteristics
8TH WEEK	1ST		CMOS inverter interconnect effects: Delay time definitions
	2nd		CMOS Inventor design with delay constraints
	3rd		Two sample mask lay out for p-type substrate
	4th	Unit-4: Static Combinational, Sequential, Dynamics logic circuits & Memories	Define Static Combinational logic
9TH WEEK	1ST		Working of Static CMOS logic circuits (Two-input NAND Gate)
	2nd		CMOS logic circuits (NAND2 Gate)
	3rd		CMOS Transmission Gates(Pass gate)
	4th		Complex Logic Circuits - Basics
10TH WEEK	1ST		Classification of Logic circuits based on their temporal behaviour
	2nd		Classification of Logic circuits based on their temporal behaviour
	3rd		SR Flip latch Circuit
	4th		Clocked SR latch only
11TH WEEK	1ST		CMOS D latch
	2nd		Basic principles of Dynamic Pass Transistor Circuits
	3rd		Basic principles of Dynamic Pass Transistor Circuits
	4th		Dynamic RAM
12TH WEEK	1ST		Static RAM
	2nd		Flash memory
	3rd	Unit-5: System Design	Design Language (SPL & HDL)& HDL & EDA tools & VHDL and packages
	4th		Design strategies & concept of FPGA with standard cell based design
	1ST		VHDL for design synthesis using CPLD or FPGA

13TH WEEK	2nd	method & synthesis	Raspberry Pi - Basic idea
	3rd	Unit-6: Introduction to Embedded Systems	Embedded Systems Overview,list of embedded systems
	4th		Characteristics of Embedded Systems ,example – A Digital Camera
14TH WEEK	1ST		Embedded Systems Technologies,Definition of Technology
	2nd		Technology for Embedded Systems-Processor Technology, IC Technology
	3rd		Design Technology-Processor Technology
	4th		General Purpose Processors – Software
15TH WEEK	1ST		Basic Architecture of Single Purpose Processors – Hardware
	2nd		Application – Specific Processors,Microcontrollers,Digital Signal
	3rd		IC Technology - Full Custom / VLSI,Semi-Custom ASIC (Gate Array & Standard Cell), PLD
	4th		Basic idea of Arduino microcontroller

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