LESSON PLAN		
ACADEMIC LESSON PLAN OF WINTER-2026		
Discipline:ETC	**Semester:5th**	**Name of the Teaching Faculty: P BHAWANI**
Subject: TH 1-DATA COMMUNICATION & COMPUTER NETWORKS	**No of Days /per week class allotted: 3**	**Semester from date: 01/07/2026 to 05/11/2026** **No of weeks: 15**
Week	**Class Day**	**Theory / Practical Topics**
1st	1st	**UNIT-I: Network & Protocol(5)** 1.1 Data Communication
	2nd	1.2 Networks
	3rd	1.3 Protocol & Architecture
2nd	1st	Standards- OSI
	2nd	TCP/IP
	3rd	**UNIT-II: Data Transmission & Media(7)** 2.1 Data transmission Concepts and Terminology
3rd	1st	2.1 Data transmission Concepts and Terminology
	2nd	2.2 Channel capacity
	3rd	2.3 Transmission media
4th	1st	2.3 Transmission media
	2nd	2.4 Guided Transmission
	3rd	2.6 Wireless Transmission
5th	1st	**UNIT-III:Data Encoding(7)** 3.1 Data encoding
	2nd	3.2 Digital data digital signals
	3rd	3.3 Digital data analog signals
6th	1st	3.3 Digital data analog signals
	2nd	3.4 Analog data digital signals
	3rd	3.4 Analog data digital signals
7th	1st	3.5 Analog data analog signals
	2nd	**UNIT-IV: Data Communication & Data link control(7)** 4.1 Asynchronous and Synchronous Transmission
	3rd	4.1 Error Detection
8th	1st	4.3 Line configuration
	2nd	4.4 Flow Control 4.5 Error Control
	3rd	4.6 Multiplexing
9th	1st	4.7 FDM synchronous TDM
	2nd	4.8 Statistical TDM
	3rd	**UNIT-V: Switching & Routing(7)** 5.1 Circuit Switching networks
10th	1st	5.2 Packet Switching principles
	2nd	5.3 X.25
	3rd	5.4 Routing in Packet switching
11th	1st	5.5 Congestion
	2nd	5.6 Effects of congestion, congestion control
	3rd	5.7 Traffic Management
12th	1st	**UNIT-VI: LAN Technology(7)** 6.1 Topology and Transmission Media
	2nd	6.2 LAN protocol architecture
	3rd	6.2 LAN protocol architecture
13th	1st	6.4 Bridges, Hub & Switch
	2nd	6.5 Ethernet (CSMA/CD)
	3rd	6.5 Ethernet (CSMA/CD)
14th	1st	6.6 Wireless LAN Technology
	2nd	**UNIT-VII: TCP/IP(5)** 7.1 TCP/IP Protocol Suite
	3rd	7.2 Basic Protocol functions

15th	1st	7.3 Internet Protocol operations
	2nd	7.3 Internet Protocol operations
	3rd	7.4 Internet Protocol

Signature of the faculty

HOD(I/C)
G.P Gajapati

LESSON PLAN		
ACADEMIC LESSON PLAN OF WINTER-2026		
Discipline:ETC	**Semester:3rd**	**Name of the Teaching Faculty: P BHAWANI**
Subject: TH 3-DIGITAL ELECTRONICS	**No of Days /per week class allotted: 3**	**Semester from date: 01/07/2026 to 05/11/2026** **No of weeks: 15**
Week	**Class Day**	**Theory / Practical Topics**
1st	1st	**UNIT-I: Logic Gates(4)** 1.1 Basic logic gates: OR, AND, and NOT 1.1.1 Truth tables ,1.1.2 Logic symbols 1.1.3 Logic voltage levels 1.1.4 Logic circuit design examples
	2nd	1.2 Integrated Circuits 1.3 NOR, NAND, Exclusive OR, and Exclusive NOR gates.
	3rd	1.4 NOR and NAND gates used as inverters. 1.5 Fan-in and fan-out 1.6 Termination of unused inputs
2nd	1st	1.7 AND and OR gates constructed from NAND and NOR gates
	2nd	**UNIT-II: Boolean Algebra (5)** 2.1 Boolean operations (OR, AND, NOT) 2.2 Representation of logic circuits by Boolean expressions.
	3rd	2.3 Laws of Boolean algebra: 2.3.1 Double inversion: A”=A 2.3.2 OR identities: A+0 = A, A+1=1, A+A=A, A+A’=1 2.3.3 AND identities: A.0=0, A.1=A, A.A=A, A.A’=0 2.3.4 Cumulative laws: A+B=B+A, A.B=B.A 2.3.5 Associative laws:(A+B)+C=A+(B+C), (A.B).C=A.(B.C) 2.3.6 Distributive laws: A+(B.C)=(A+B).(A+C), A.(B+C)=A.B+A.C 2.3.7 DeMorgan’s theorems :(A+B+C+...)’=A’.B’.C’...,(A.B.C...)’=A’+B’+C’... 2.3.8 Applications to logic circuit simplifications and design 2.4 Equivalent logic gates
3rd	1st	2.5 NAND and NOR implementations of logic circuits. 2.6 Standard forms of Boolean expressions 2.6.1 Sum-of-products (SOP) 2.6.2 Product-of-sums (POS)
	2nd	2.7 Karnaugh mapping
	3rd	2.7 Karnaugh mapping
4th	1st	**UNIT-III:Combinational Logic Circuits(6)** 3.1 Half adder 3.2 Full adder
	2nd	3.3 Half Subtractor 3.4 Full Subtractor 3.5 4 bit adder.
	3rd	3.6 Multiplexer (4:1) 3.7 De- multiplexer (1:4)
5th	1st	3.8 Decoder 3.9 Encoder
	2nd	3.10 Digital comparator (3 Bit)
	3rd	3.11 Seven segment Decoder
6th	1st	**UNIT-IV: Latches & Flip-Flops (6)** 4.1. Basic latches 4.1.1 NOR latch, 4.1.2 NAND latch,4.1.3 Example uses of latches
	2nd	4.2. Gated latches 4.2.1 Gated S-R latch 4.2.2 Gated D-latch
	3rd	4.3. Flip-flops: 4.3.2 S-R flip-flop 4.3.3 D-type flip-flop
7th	1st	4.3.4 J-K flip-flop 4.3.5 T-type flip-flop
	2nd	4.3.1 Master-slave and edge-triggered principles
	3rd	4.3.6 Flip-flop timing diagrams

8th	1st	**UNIT-V: Counters (7)** 5.1 Circuit diagramand working principle of Binary counters
	2nd	5.2 up-down counter (circuits, truth tables, and timing diagrams)
	3rd	5.3 Asynchronous counters and ripple counter 5.4 Synchronous counters
9th	1st	5.5 Decade counter
	2nd	5.6 Module–n counter and its combinations 5.7. Divide-by-n counters obtained from truncated binary sequences
	3rd	5.8. Synchronous counter design using D-type flip-flops
10th	1st	5.9 Synchronous counter design using J-K flip-flops
	2nd	**UNIT-VI: Shift Registers(5)** 6.1 Circuit diagram, truth tables, and timing diagrams of Shift Registers
	3rd	6.2 Serial input shift register
11th	1st	6.3 Serial/parallel load shift register
	2nd	6.4 Shift register counters 6.4.1. Ring counter 6.4.2. Self-starting ring counter
	3rd	6.4.3. Johnson counter
12th	1st	**UNIT-VII: Semiconductor Memories (7)** 7.1 Define the terms ROM, RAM, PROM, EPROM.
	2nd	7.2 Draw a typical memory cell
	3rd	7.3 Design a small diode matrix ROM to serve as a code converter.
13th	1st	7.4 Design and draw the logic diagram of a specified size memory system
	2nd	7.5 Operating principle of dynamic memory
	3rd	7.6 Advantages and disadvantages of dynamic memory vs. static memory
14th	1st	7.7 Difference between dynamic memory vs. static memory
	2nd	**UNIT-VIII:Sequential Circuit Design(5)** 8.1 Combinational vs. Sequential circuits
	3rd	8.2 Adder, Subtractor, decoder
15th	1st	multiplexer, de-multiplexer
	2nd	comparator
	3rd	8.3. Finite state machines- Concept only

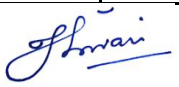
Signature of the faculty

HOD(I/C)
G.P Gajapati

LESSON PLAN		
ACADEMIC LESSON PLAN OF WINTER-2026		
Discipline:ETC	**Semester:3rd**	**Name of the Teaching Faculty: P BHAWANI**
Subject: TH 5-SIGNAL & SYSTEMS	**No of Days /per week class allotted: 3**	**Semester from date: 01/07/2026 to 05/11/2026** **No of weeks: 15**
Week	**Class Day**	**Theory / Practical Topics**
1st	1st	**UNIT-I: Introduction to Signals and Systems (5)** 1.1 Signals and systems as seen in everyday life
	2nd	1.2 Signals and systems in various branches of engineering
	3rd	1.3 Electrical, mechanical, hydraulic, thermal, biomedical signals and systems as examples
2nd	1st	1.3 Electrical, mechanical, hydraulic, thermal, biomedical signals and systems as examples
	2nd	1.4 Extracting the common essence and requirements of signal and system

	3rd	**UNIT-II: Formalizing signals(7)** 2.1 Energy and power signals
3rd	1st	2.2 Signal properties 2.2.1 Periodicity 2.2.2 Absolute integrability 2.2.3 Determinism and stochastic character
	2nd	2.3 Some special signals of importance 2.3.1 The unit step 2.3.2 The unit impulse 2.3.3 The sinusoid 2.3.4 The complex exponential
	3rd	2.4 some special time-limited signals 2.4.1 Continuous and discrete time signals,
4th	1st	2.4.2 Continuous and discrete amplitude signals.
	2nd	2.5 Formalizing systems- system properties 2.5.1 Linearity 2.5.2 Additivity and homogeneity 2.5.3 Shift-invariance
	3rd	2.5.4 Causality 2.5.5 Stability 2.5.6 Reliability
5th	1st	**UNIT-III:Continuous time and discrete time Systems (7)** 3.1 Linear shift-invariant (LSI) systems in detail
	2nd	3.2 The impulse response and step response
	3rd	3.3 Convolution
6th	1st	3.4 Input-output behavior with aperiodic convergent inputs
	2nd	3.5 Cascade interconnections
	3rd	3.6 Characterization of causality and stability of linear shift-invariant systems equations and difference equations
7th	1st	3.7 System representation through differential
	2nd	**UNIT-IV: Periodic and semi-periodic inputs to an LSI system (7)** 4.1 The notion of a frequency response and its relation to the impulse response, 4.2 Fourier series representation
	3rd	4.3 The Fourier Transform
8th	1st	4.4 Convolution/multiplication and their effect in the frequency domain, magnitude and phase response, Fourier domain duality.
	2nd	4.5 The Discrete-Time Fourier Transform (DTFT)
	3rd	4.6 The Discrete Fourier Transform (DFT)
9th	1st	4.7 Parseval's Theorem
	2nd	4.8 The idea of signal space and Orthogonal bases of signals.
	3rd	**UNIT-V: Laplace Transform for continuous time signals and systems (7)** 5.1 The notion of Eigen functions of LSI systems ,5.2 A basis of Eigen functions
10th	1st	5.3 Region of convergence
	2nd	5.4 System functions
	3rd	5.5 Poles and zeros of system functions and signals
11th	1st	5.6 Laplace domain analysis
	2nd	5.7 Solution to differential equations and system behavior
	3rd	5.8 Generalization of Parseval's Theorem
12th	1st	**UNIT-VI: System realization(7)** 6.1 System realization through block-diagram representation and system interconnection
	2nd	6.2 State-space analysis and multi-input, multi-output representation.
	3rd	6.3 The state-transition matrix and its role.
13th	1st	6.4 The Sampling Theorem and its implications 6.4.1 Spectra of sampled signals.
	2nd	6.5 Reconstruction: 6.5.1 Ideal interpolator 6.5.2 Zero-order hold 6.5.3 First-order hold
	3rd	6.6 Aliasing and its effects.
14th	1st	6.7 Relation between continuous and discrete time systems.
	2nd	**UNIT-VII: Applications of signal and system theory (5)** 7.1 Modulation for communication and filtering

	3rd	7.2 Time-frequency representation and the uncertainty principle
15th	1st	7.2 Time-frequency representation and the uncertainty principle
	2nd	7.3 Short-time Fourier Transforms and wavelet transforms.
	3rd	7.3 Short-time Fourier Transforms and wavelet transforms.



Signature of the faculty

HOD(I/C)
G.P Gajapati

LESSON PLAN		
ACADEMIC LESSON PLAN OF WINTER-2026		
Discipline:ETC	**Semester: 3rd**	**Name of the Teaching Faculty: P BHAWANI**
Subject: PR:3-DIGITAL ELECTRONICS LAB	**No of Days / per week class allotted: 2**	**Semester from date: 01/07/2026 to 05/11/2026** **No of weeks: 15**
Week	**Class Day**	**Theory Topics**
1st	1st	Familiarization of Digital Trainer Kit & Digital ICs 7400, 7402, 7404(draw their pin diagram and features)
	2nd	Familiarization of Digital Trainer Kit & Digital ICs 7408, 7432 & 7486 (draw their pin diagram and features)
2nd	1st	Verify truth tables of AND, OR, NOT gates using ICs & simplifications of Boolean gates
	2nd	Verify truth tables of NOR, NAND, XOR, XNOR gates using ICs & simplifications of Boolean gates
3rd	1st	Verify Universal Logic Gate
	2nd	Verify Universal Logic Gate
4th	1st	Construct & verify operation of Half adder using logic gates
	2nd	Construct & verify operation of Full adder using logic gates
5th	1st	Construct & verify operation of Half Subtractor using logic gates
	2nd	Construct & verify operation of Full Subtractor using logic gates
6th	1st	Design & implement a 4-bit Binary to Gray code converter.
	2nd	Design & implement a single bit/two-bit digital comparator circuit
7th	1st	Design Multiplexer (4:1)
	2nd	Design De-multiplexer (1:4).
8th	1st	Study the operation of flip-flops (i) S-R flip flop
	2nd	Study the operation of flip-flops (ii) J-K flip flop
9th	1st	Study the operation of flip-flops (iii) D flip flop
	2nd	Study the operation of flip-flops (iv) T flip flop
10th	1st	Realize a 4-bit asynchronous UP/Down Counter.
	2nd	Realize a 4-bit asynchronous UP/Down Counter.
11th	1st	Realize a 4-bit synchronous UP/Down Counter.
	2nd	Realize a 4-bit synchronous UP/Down Counter.
12th	1st	Study shift registers-4 bit Registers
	2nd	Seven segment display with a decoder
13th	1st	Develop a 4-bit ripple counter by using FF
	2nd	Develop a decade counter by using a 7490 IC
	1st	Develop a decade counter by using a 7490 IC

14th	2nd	Mini Project using Software: To collect data like pin configurations, display devices, Operational characteristics, applications and critical factors etc. on all digital ICs studied in theory and compile a project report throughout and submit at the end of the semester. To assemble and tests circuits using above digital ICs with test points e.g. Digital Clock/Frequency Counter/ Running Glow Light up to 999/Solar cell & Opto coupler applications.
15th	1st	Mini Project
	2nd	Mini Project

Signature of the faculty

HOD(I/C)
G.P Gajapati

LESSON PLAN		
ACADEMIC LESSON PLAN OF WINTER-2026		
Discipline:ETC	**Semester: 5th**	**Name of the Teaching Faculty: P BHAWANI**
Subject: PR:1- DATA COMMUNICATION & COMPUTER NETWORKS LABORATORY	**No of Days / per week class allotted: 2**	**Semester from date: 01/07/2026 to 05/11/2026** **No of weeks: 15**
Week	**Class Day**	**Theory Topics**
1st	1st	Recognize the physical topology and cabling (coaxial, OFC, UTP, STP) of a network
	2nd	Recognize the physical topology and cabling (coaxial, OFC, UTP, STP) of a network
2nd	1st	Recognition and use of various types of connectors RJ-45, RJ-11,BNC and SCST
	2nd	Recognition and use of various types of connectors RJ-45, RJ-11,BNC and SCST
3rd	1st	Making of cross cable and straight cable
	2nd	Install and configure a network interface card in a workstation
4th	1st	Identify the IP address of a workstation and the class of the address and configure the IP Address on a workstation
	2nd	Identify the IP address of a workstation and the class of the address and configure the IP Address on a workstation
5th	1st	Managing user accounts in windows and LINUX
	2nd	Managing user accounts in windows and LINUX
6th	1st	Sharing of Hardware resources in the network.
	2nd	Sharing of Hardware resources in the network.
7th	1st	Use of Netstat and its options.
	2nd	Connectivity troubleshooting using PING, IPCONFIG
8th	1st	Connectivity troubleshooting using PING, IPCONFIG
	2nd	Installation of Network Operating System(NOS)
9th	1st	Installation of Network Operating System(NOS)
	2nd	Create a network of at least 6 computers
10th	1st	Create a network of at least 6 computers
	2nd	Study of Layers of Network and Configuring Network Operating System
11th	1st	Study of Routing and Switching, configuring of Switch and Routers, troubleshooting of networks

11th	2nd	Study of Scaling of Networks, Design verities of LAN and forward of Traffic
12th	1st	Study WAN concepts and Configure and forward Traffic in WAN
	2nd	Configure IPv4 and IPv6 and learn Quality, security and other services
13th	1st	Configure IPv4 and IPv6 and learn Quality, security and other services
	2nd	Learn Network programming
14th	1st	Learn Network programming
	2nd	Learn Network programming
15th	1st	Troubles shoot Networks
	2nd	Troubles shoot Networks

Signature of the faculty

HOD(I/C)
G.P Gajapati