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Maharashtra State Board of Technical Education, Mumbai

TEACHING PLAN (TP)

Institute Name: 0078- K. K. Wagh Polytechnic, Nashik
Academic Year: **2025-26 (EVEN)**
Course: Data Communication and Computer Network (**DCN**)
CLASS: SYIF (PARAM)

Scheme: K
Program: Information Technology
Course Code: 314318
Name of Faculty: Ms. D. S. Katkade

COURSE LEVEL LEARNING OUTCOMES (COS)

- CO1 - Analyze the functioning of Data Communication and Computer Network.
- CO2 - Select relevant Transmission Media and Switching Techniques as per need.
- CO3 - Analyze the Transmission Errors with respect to IEEE standards.
- CO4 - Configure different TCP/IP services.
- CO5 - Implement relevant Network Topology using Networking Devices.

TEACHING-LEARNING & ASSESSMENT SCHEME

Course Code	Course Title	Abbr	Course Category	Learning Scheme					Credits	Paper Duration	Assessment Scheme										Total Marks
				Actual Contact Hrs/Week			SLH	NLH			Theory				Based on LL & TSL Practical				Based on SL		
											FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
				CL	TL	LL					Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
314318	Data Communication and Computer Network	DCN	DSC	3	-	4	1	8	4	3	30	70	100	40	25	10	25@	10	25	10	175

Total IKS Hrs for Sem.: 0 Hrs

Abbreviations: CL- Classroom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours,FA - Formative Assessment, SA -Summative assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment Legends: @ Internal Assessment, # External Assessment, *# On Line Examination , @$ Internal Online Examination

SUGGESTED COS - POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO- 1	PSO-2
CO1	1	-	2	1	-	-	1	2	2
CO2	1	1	2	1	-	1	1	2	3
CO3	1	2	1	1	-	-	1	3	2
CO4	1	2	2	1	-	1	1	3	3
CO5	-	2	2	1	1	1	1	2	3

Legends :- High:03, Medium:02,Low:01, No Mapping: -
*PSOs are to be formulated at institute level

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Unit No. (Allocated Hrs.)	CO	TLO aligned to COs	Title/ Details	Plan (No. of Lectures)		Actual Execution (From-To & No. of Lectures)		Pedagogy used (Teaching method /Media	Remarks
				From	To	From	To		
01 (10)	CO1		**Unit - I Fundamentals of Data Communication and Computer Network**					Chalk, Board, PPT+ LCD Videos, Google Classro Learn Live	
				02 Lectures					
		TLO 1.1	1.1 Describe the role of the given component in the process of data communication	**15/12/25**	**18/12/25**				
		TLO 1.2, TLO 1.3	1.2 Protocols, Standards, Standard organizations, Bandwidth, Data Transmission Rate, Baud Rate and Bits per second 1.3 Modes of Communication (Simplex, Half duplex, Full Duplex)	**02 Lectures**					
				19/12/25	**22/12/25**				
		TLO 1.4	1.4 Analog Signal and Digital Signal, Analog and Digital Transmission: Analog To Digital, Digital To Analog Conversion	**03 Lectures**					
				26/12/25	**31/12/25**				
		TLO 1.5, TLO 1.6	1.5 Fundamental Of Computer Network: Definition And Need Of Computer Network, Applications, Network Benefits 1.6 Classification Of Network: LAN, WAN,MAN	**03 Lectures**					
				01/01/26	**05/01/26**				

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02 (10)	**CO2**		**Unit – II Transmission Media And Switching**					Chalk, Board, PPT Videos, LEARN LIVE	
				02 Lectures					
		TLO 2.1	2.1Communication Media: Guided Transmission Media Twisted-Pair Cable, Coaxial Cable, Fiber-Optic Cable	**07/01/26**	**08/01/26**				
		TLO 2.2	2.2 Unguided Transmission Media: Radio Waves, Microwaves, Infrared, Satellite	**02 Lectures**					
				09/01/26	**12/01/26**				
		TLO 2.3	2.3 Line-of-Sight Transmission, Point-to-Point, Broadcast	**02 Lectures**					
				14/01/26	**15/01/26**				
		TLO 2.4	2.4 Multiplexing: Frequency-Division Multiplexing ,Time - Division Multiplexing	**02 Lectures**					
				16/01/26	**19/01/26**				
		TLO 2.5	2.5 Switching: Circuit-switched network, Packet switched network	**02 Lectures**					
				22/01/26	**23/01/26**				
03 (12)	**CO3**		**Unit - III Error Detection and Correction**					Chalk, Board, PPT, LEARN LIVE	
				03 Lectures					
		TLO 3.1, TLO 3.2	3.1 Types of Errors, Forward Error Correction Versus Retransmission 3.2 Framing: Fixed Sized and Variable Sized Framing	**30/01/26**	**04/02/26**				
		TLO 3.3 TLO 3.4	3.3 Error Detection: Repetition codes, Parity bits, Checksums, CRC 3.4 Error Correction: Automatic Repeat Request (ARQ), S=U3/Hamming Code	**04 Lectures**					
				05/02/26	**11/02/26**				

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		TLO 3.5	3.5 Wireless LAN IEEE 802.11 standard Architecture, Features of IEEE 802.11 versions: 802.11,802.11a,802.11b,802.11g,802.11n,802.11p	02 Lectures				Chlk, Board, PPT Videos, LEARN LIVE	
				12/02/26	13/02/26				
		TLO 3.6 TLO 3.7	3.6 Bluetooth Architecture: Piconet, Scatter net 3.7 Mobile Generations: 3G, 4G and 5G	02 Lectures					
				16/02/26	18/02/26				
04 (12)	CO4		**Unit - IV Network Communication Models**					Chalk, Board, PPT Videos, LEARN LIVE	
				02 Lectures					
		TLO 4.1	THE OSI MODEL: Layered Architecture, Encapsulation	20/02/26	23/02/26				
		TLO 4.2	4.2 Layers in OSI Model(Functions of each layer)-Physical Layer, Data-Link Layer, Network Layer, Transport Layer, Session Layer, Presentation Layer, Application Layer	03 Lectures					
				27/02/26	05/03/26				
		TLO 4.3	4.3 TCP/IP Layers and their functions: Host To Network Layer, Internet Layer, Transport Layer, Application Layer	02 Lectures					
				06/03/26	09/03/26				
		TLO 4.4	4.4 Protocols: Host To Network Layer-SLIP,PPP, Internet Layer-IP,ARP,RARP,ICMP, Transport Layer-TCP and UDP, Application Layer-FTP,HTTP,SMTP,TELNET,BOOTP,DHCP	02 Lectures					
				11/03/26	12/03/26				
		TLO 4.5, TLO 4.6	4.5 Addressing: Physical Address, Logical Address, Port Address 4.6 IP Address-Concept, Notation, Address Space	02 Lectures					
				11/03/26	12/03/26				

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		TLO 4.7, TLO 4.8	4.7 IPv4 Addressing: Classful and Classless Addressing ,subnet mask, supernetting, subnetting 4.8 IPV6 Addressing scheme and basic structure	**02 Lectures**					
				13/03/26	**16/03/26**				
05 (05)	**CO5**		**Unit - V Network Topologies And Network Devices**					Chalk, Board, PPT Videos, LEARN LIVE	
				03 Lectures					
		TLO 5.1 TLO 5.2	5.1 Network Computing Model: Peer To Peer, Client Server 5.2 Network Topologies: Introduction, Definition, Selection criteria, Types of Topology- Star ,Mesh, Tree, Hybrid	**20/03/26**	**23/03/26**				
		TLO 5.3	5.3 Network Connecting Devices: Switch, Router, Repeater, Bridge, Gateways and Modem	**02 Lectures**					
				26/03/26	**27/03/26**				
Content Beyond Syllabus			**Network Address Translation (NAT)**	01 Lecture					
				Last week of March					

ASSESSMENT METHODOLOGIES/TOOLS

A. Formative assessment (Assessment for Learning)

- Continuous assessment based on process and product related performance indicators.
- Each practical will be assessed considering
  - 60% weightage to process
  - 40% weightage to product.
- A continuous assessment based term work.

B. Summative Assessment (Assessment of Learning)

- End semester examination, Lab performance, Viva-voce

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SUGGESTED LEARNING MATERIALS / BOOKS

Sr.No	Author	Title	Publisher with ISBN Number
1	Behrouz A. Forouzan	Data Communication and Networking	McGraw-Hill Higher Education ISBN-13 978-07296775-3
2	Behrouz A. Forouzan:	TCP/IP Protocol Suit	McGraw Hill Education ISBN-13 978-0073376042
3	A.S. Tanenbaum	Computer Networks	PRENTICE HALL ISBN-10: 0-13-212695-8 ,ISBN13:978-0-13-212695-3
4	Godbole Achyut	Data Communication and Networks	McGraw Hill Education ISBN-10 9780071077705,ISBN-13 978-0071077705
5	Comer Douglas E.	TCP/IP Principles, Protocols and Architectures	PEARSON ISBN 10: 0-13-608530-X ISBN 13: 9780-13-608530-0

LEARNING WEBSITES & PORTALS

Sr. No	Link /Portal	Description
1	https://www.geeksforgeeks.org/data-communication-definition components-types-channels/	Data Communication-Definition, Components, Types, ,Channels
2	https://www.tutorialspoint.com/data_communication_computer_network/index.htm	Open Office Data Communication and Computer Network
3	https://nptel.ac.in/courses/106105081	Computer Networks
4	https://nptel.ac.in/courses/106105183	Computer Networks and Internet Protocol
5	Introduction To Computer Networks | Studytonight	Introduction To Computer Networks

Ms. D. S. Katkade
(Name & Signature of Staff)

Ms. M. S. Karande
(Name & Signature of HOD)