

# Maharashtra State Board of Technical Education, Mumbai

## TEACHING PLAN (TP)

**Institute Name:** 0078-K. K. Wagh Polytechnic, Nashik

**Academic Year:** 2025-26 (EVEN)

**Program:** Information Technology (IF)      **Course:** Data Communication and Computer Network (DCN)

**Course Code:** 314318      **Scheme:** K

**Semester:** Fourth

**CLASS:** SYIF (CRAY)

**Name of Faculty:** Mrs. .P. A. Thakare

### 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							Assessment Scheme								Total Marks		
				Actual Contact Hrs/Week			SLH	NLH	Credits	Paper Duration	Theory			Based on LL & TSL Practical				Based on SL			
				C	T	L					FA-TH	SA-TH	Total		FA-PR		SA-PR			SLA	
							Max	Min	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	1	1
CO2	1	1	2	1	-	1	1	1	1
CO3	1	2	1	1	-	-	1	1	1
CO4	1	2	2	1	-	1	1	1	1
CO5	-	2	2	1	1	1	1	2	2

Legends :- High:03, Medium:02,Low:01, No Mapping: -

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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		<b>Unit - I Fundamentals of Data Communication and Computer Network</b>					Chalk, Board, PPT+ LCD Videos, Google Classroom, MKCL ERA		
				02 Lectures						
		TLO 1.1	1.1 Describe the role of the given component in the process of data communication	15/12/25	16/12/25					
		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)	03 Lectures		17/12/25	22/12/25			
		TLO 1.4	1.4 Analog Signal and Digital Signal, Analog and Digital Transmission: Analog To Digital, Digital To Analog Conversion	02 Lectures		23/12/25	24/12/25			
		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	02 Lectures		26/12/25	29/12/25			

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02 (10)	CO2		<b>Unit – II Transmission Media And Switching</b>					Chalk, Board, PPT Videos, MKCL ERA	
				02 Lectures					
		TLO 2.1	2.1 Communication Media: Guided Transmission Media Twisted-Pair Cable, Coaxial Cable, Fiber-Optic Cable	30/12/25	31/01/26				
		TLO 2.2	2.2 Unguided Transmission Media: Radio Waves, Microwaves, Infrared, Satellite	02 Lectures					
				02/01/26	05/01/26				
		TLO 2.3	2.3 Line-of-Sight Transmission, Point-to-Point, Broadcast	02 Lectures					
				06/01/26	07/01/26				
		TLO 2.4	2.4 Multiplexing: Frequency-Division Multiplexing, Time-Division Multiplexing	02 Lectures					
		09/01/26	12/01/26						
TLO 2.5	2.5 Switching: Circuit-switched network, Packet switched network	02 Lectures							
				13/01/26	16/01/26				
03 (12)	CO3		<b>Unit - III Error Detection and Correction</b>					Chalk, Board, PPT, MKCL ERA	
				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	19/01/26	21/01/26				
		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					
				23/01/26	03/02/26				

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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		04/02/26	06/02/26			
		TLO 3.6 TLO 3.7	3.6 Bluetooth Architecture: Piconet, Scatternet 3.7 Mobile Generations: 3G, 4G and 5G	02 Lectures		09/02/26	10/02/26			
04 (12)	CO4		<b>Unit - IV Network Communication Models</b>					Chalk, Board, PPT Videos, MKCL ERA		
				02 Lectures						
		TLO 4.1	THE OSI MODEL: Layered Architecture, Encapsulation	16/02/26	17/02/26					
		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		11/02/26	17/02/26			
		TLO 4.3	4.3 TCP/IP Layers and their functions: Host To Network Layer,Internet Layer,Transport Layer,Application Layer	02 Lectures		18/02/26	20/02/26			
		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,B OOTP,DHCP	02 Lectures		23/02/26	24/02/26			
		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		25/02/26	27/02/26			

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		<b>TLO 4.7, TLO 4.8</b>	4.7 IPv4 Addressing: Classful and Classless Addressing ,subnet mask,supernetting,subnetting 4.8 IPV6 Addressing scheme and basic structure	02 Lectures		02/03/26	04/03/26			
<b>05 (12)</b>	<b>CO5</b>		<b>Unit - V Network Topologies And Network Devices</b>	02 Lectures				Chalk, Board, PPT Videos, MKCL ERA		
		<b>TLO 5.1</b>	5.1 Network Computing Model: Peer To Peer, Client Server	06/03/26	09/03/26					
		<b>TLO 5.2</b>	5.2 Network Topologies: Introduction, Definition, Selection criteria, Types of Topology- Star ,Mesh, Tree, Hybrid	04 Lectures		11/03/26	17/03/26			
		<b>TLO 5.3</b>	5.3 Network Connecting Devices: Switch, Router, Repeater, Bridge, Gateways and Modem	02 Lectures						
<b>Content Beyond Syllabus</b>			Data Communication in Real World	02 Lectures		25/02/26	27/03/26			

### 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	<a href="https://www.geeksforgeeks.org/data-communication-definition-components-types-channels/">https://www.geeksforgeeks.org/data-communication-definition-components-types-channels/</a>	Data Communication- Definition, Components, Types, ,Channels
2	<a href="https://www.tutorialspoint.com/data_communication_computer_network/index.htm">https://www.tutorialspoint.com/data_communication_computer_network/index.htm</a>	Open Office Data Communication and Computer Network
3	<a href="https://nptel.ac.in/courses/106105081">https://nptel.ac.in/courses/106105081</a>	Computer Networks
4	<a href="https://nptel.ac.in/courses/106105183">https://nptel.ac.in/courses/106105183</a>	Computer Networks and Internet Protocol
5	Introduction To Computer Networks   Studytonight	Introduction To Computer Networks

**Mrs. P. A. Thakare**  
(Name & Signature of Staff)

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