

Subject Teacher : Muhammad Shahidul Islam
 (Sr.Instructor) Subject Name : Data Communication System
 Subject Code : 28554
 Technology : Computer
 Semester : th
 Reference Book : *Computer Networks. By ANDREW S. TANENBAUM*
 Text Book: Data Communication System
 (Publisher: HaqueProkashani / Technical Prokashoni)

Marks	Grade Point	Letter Grade	Marks	Grade Point	Letter Grade
80>	4.00	A+	55-59	2.75	B-
75-79	3.75	A	50-54	2.50	C+
70-74	3.50	A-	45-49	2.25	C
65-69	3.25	B+	40-44	2.00	D
60-64	3.00	B	0-39	0.00	F

Mark Distribution (for 200 Marks)			
Theory Marks		Practical Marks	
Midterm	10	PC	50
Class test	05	PF	50
Quiz test	05	-	-
Final	80	-	-
Total	100	Total	100

INTENTION

AIMS

- To be able to acquire the knowledge on data communication Basics.
- To be able to provide the knowledge and to develop skill on signal and data transmission systems and transmission media.
- To be able to acquire the knowledge on Digital communication and computer networks.
- To be able to provide the knowledge and to develop skill on network topologies and protocols.
- To be able to provide the knowledge and to develop skill on MODEM, Hub, Switch, NIC and Repeater.
- To be able to establish and implement a LAN to provide Network services.

SHORT DESCRIPTION

Communication Basics; Analog and Digital Modulation and Demodulation; Analog and Digital communication; Transmission media and connectors; LAN, Network fundamentals; Peer-peer & Client-Server techniques; Topologies and protocols; NIC; Network Addressing; IP address and Subnet Mask.

Date	Lecture	Chapter/ Exam	Learning Area	Learning Outcome	Supporting Equipment
10.01.2026	01	Introduction	Introduce subject and all chapter, Marks and Lesson Plan. Google Classroom	Student will know How to use Google Class room? Students Get Google Classroom subject code. Class Code: lat3wid	Projectors & Google Classroom. https://sites.google.com/a/bsdi-bd.org/shahidulsir/subjects/data-communication-system66644/6th-

					telecommunication https://classroom.google.com
11.01.2026	02	1.Understand communication basics.	1.04 Define Electronic Communication. 1.2 Mention the basic elements of a communication system.	Student will Understand Electronic Communication, basic elements of a communication system. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base 1. Classroom, Whiteboard, Marker. 2. Projector. 3.PC with Internet.
	03		1.3 Describe communication system with a simple block diagram. 1.4 State the terms: Frequency, Wavelength, Spectrum, Bandwidth, Throughput, propagation speed, propagation time, Noise figure & SNR	Students will know communication system Frequency, Wavelength, Spectrum, Bandwidth. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base 1. Classroom, Whiteboard, Marker. 2. Projector. 3.PC with Internet.
16.01.2026	04		1.5 Mention the difference between bandwidth and data	Students will know bandwidth and data rate, simplex, half-	Theory Base 1. Classroom, White

			rate. 1.6 Describe simplex, half-duplex and full duplex modes of communication. 1.7 Describe synchronous and asynchronous communication techniques.	duplex and full duplex modes of communication, synchronous and asynchronous. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	board, Marker. 2. Projector. 3. PC with Internet.
	05	Review Class	Chapter:1 (Regarding students problem)	Students will learn How to Increase Question create Ability and Expand Answer from different source. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base/Practical 1. Classroom, White board, Marker. 2. Projector. 3. PC with Internet
23.01.2026	06	1st Quiz Test	Chapter 1	Students will know bandwidth and data rate, simplex, half-duplex and full duplex modes of communication, synchronous and asynchronous, Frequency, Wavelength	Theory Base 1. Classroom, White board, Marker. 2. Projector. 3. PC with Internet 4. Answer scripts.

				,Spectrum, Bandwidth. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	
	07	2.Understand Analog communication system	2.1 Define Modulation and Demodulation. 2.2 Sta te the necessity of modulation .	UnderstandModulati on and Demodulation. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base 1.Classroom,White board,Marker. 2.Projector. 3.PC with Internet
1.05.2026	08		2.3 Mention the types of modulation. 2.4 Describe amplitude, Frequency and Phase modulatio n with necessary waveform.	Students will Know amplitude, Frequency and Phase. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study &	Theory Base 1. Classroom ,White board,Marker. 2.Projector. 3.PC with Internet

				Present their making topic.	
	09		2.5 State the meaning of modulation index and percentage of modulation. 2.6 State the comparison of amplitude, Frequency and Phase modulation. 2.7 State the difference between analog and digital modulation	Understand amplitude, Frequency and Phase modulation, digital modulation. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base 1. Classroom, White board, Marker. 2. Projector. 3. PC with Internet
8.05.2026	10		2.8 Describe ASK, FSK, PSK and QPSK with necessary waveform and bandwidth. 2.9 State the advantage and disadvantages of ASK, FSK and PSK (BPSK)	Understand ASK, FSK, PSK and QPSK. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	
15.05.2026	11	Review Class	Chapter:2 (Regarding students problem)	Students will Know amplitude, Frequency and Phase. Student will Create Question About the Topic. Also Student will create Answer	Theory Base/Practical 1. Classroom, White board, Marker. 2. Projector. 3. PC with Internet

				from there Question. Group Study & Present their making topic.	
22.05.2026	12	1st Class Test	Chapter 2	Students will Know Modulation and Demodulation, amplitude, Frequency and Phase modulation, digital modulation. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base 1. Classroom, White board, Marker. 2. Projector. 3. PC with Internet 4. Answer scripts.
	13	3 Understand Digital communication system	3.04 Define digital modulation. 3.2 Describe Digital communication system with block diagram.	Understand Digital communication system with block diagram. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base 1. Classroom, White board, Marker. 2. Projector. 3. PC with Internet
29.05.2026	14		3.3 Define line coding.	Students will learn line coding.	Theory Base 1. Classroom, White

			3.4 Mention the categories of Line coding	Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	board,Marker. 2. Projector. 3.PC with Internet
	15		3.5 State Unipolar Linecoding with timing diagram and its drawbacks. 3.6 Describe different types of polar encoding with necessary timing diagram.	Understand Unipolar Linecoding, polar encoding Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	
5.06.2026	16	Review Class	Chapter:3 (Regarding students problem)	Students will learn How to Increase Question create Ability and Expand Answer from different source. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their	Theory Base/Practical 1. Classroom ,White board,Marker. 2.Projector. 3.PC with Internet

				making topic.	
	17	2nd Quiz Test	Chapter 3	Digital communication, line coding To Learn How to give Exam quickly and Timely. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base 1. Classroom, White board, Marker. 2. Projector. 3. PC with Internet 4. Answer scripts.
12.06.2026	18	4. Understand transmission media and connectors.	4.1 Mention the categories of transmission media 4.2 Describe the construction of Twisted-pair (STP, UTP) Co-axial and fiberoptic cable.	Understand categories of transmission media, Twisted-pair, Co-axial and fiberoptic cable. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base 1. Classroom, White board, Marker. 2. Projector. 3. PC with Internet
	15		4.7 Describe the method of Radio, microwave and infrared communication system.	Students will Know Radio, microwave and infrared communication system. Student will Create	Theory Base 1. Classroom, White board, Marker. 2. Projector.

			4.8 State the characteristics of Radio,microwave and infra red communication system.	Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	3.PC with Internet
19.06.2022	16	Review Class	Chapter:4 (Regarding students problem)	Students will learn How to Increase Question create Ability and Expand Answer from different source. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base/Practical 1. Classroom ,White board,Marker. 2.Projector. 3.PC with Internet
	17	2nd Class Test	Chapter 4	Students will Know transmission media,Twisted-pair, Co-axial and fiberoptic cable, Radio ,microwave and infrared communication system. Student will Create Question About the Topic. Also Student will create Answer	Theory Base 1. Classroom ,White board,Marker. 2.Projector. 3.PC with Internet 4. Answer scripts.

				from there Question. Group Study & Present their making topic.	
26.06.2022	18	5.Understand multiplexing techniques	5.04 Define multiplexing and Demultiplexing process of communication system. 5.2 State the necessity of multiplexing.	Understand multiple xing and Demultiplexing process of communication system. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base 1.Classroom,White board,Marker. 2.Projector. 3.PC with Internet
3.04.2026	19		5.3 Mention the categories of multiplexing. 5.4 Define Frequency division multiplexing. 5.5 Describe Frequency division multiplexing and demultiplexing technique with block diagram	Students will know the multiplexing,demultiplexing technique with block diagram. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base 1. Classroom ,White board,Marker. 2.Projector. 3.PC with Internet
	20		5.6 Describe the Wave division multiplexing and	Students will Know the Wave division multiplexing and	Theory Base 1.Classroom,White

			Demultiplexing technique with block diagram 5.7. Define Time division Multiplexing.	Demultiplexing. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	board,Marker. 2.Projector. 3.PC with Internet
10.04.2026	21		5.8. Describe the process of synchronous Time division Multiplexing. 5.9. Describe the principle of Code division multiplexing system.	Understand multiplexing and Demultiplexing process of communication system. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base 1. Classroom ,White board,Marker. 2.Projector. 3.PC with Internet
		Review Class	Chapter:5 (Regarding students problem)	Students will learn How to Increase Question create Ability and Expand Answer from different source. Student will Create Question About the Topic. Also Student will create Answer	Theory Base/Practical 1. Classroom ,White board,Marker. 2.Projector. 3.PC with Internet

				from there Question. Group Study & Present their making topic.	
17.04.2026	22	3rd Quiz Test	Chapter 5	Students will Know the multiplexing and Demultiplexing. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base 1. Classroom, White board, Marker. 2. Projector. 3. PC with Internet 4. Answer scripts.
	23	6. Understand computer network basics.	6.04 Define Computer Network 6.2. State the concept of computer Network	Students will Know the 802 project model, IEEE 802 and OSI model. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base 1. Classroom, White board, Marker. 2. Projector. 3. PC with Internet
	24		6.3 Mention elements of computer network. 6.4 Describe the advantages of Computer network.	Students will Know the Ethernet Basic Features, 5-4-3 rule of thumb for thicknet and thinnet	Theory Base 1. Classroom , White board, Marker. 2. Projector.

				Ethernet LAN. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	3.PC with Internet
20.04.2026	25		6.5 Describe the application of computer network. 6.6 Describe client / server and peer-to- peer network. 6.7 Describe the general features of LAN, MANs and WANs.	Students will Know the nested interfaces, variables in interfaces, java programs. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base 1. Classroom ,White board,Marker. 2.Projector. 3.PC with Internet
	26	Review Class	Chapter:6 (Regarding students problem)	Students will learn How to Increase Question create Ability and Expand Answer from different source. Student will Create Question About the Topic. Also Student will create Answer from there	Theory Base/Practical 1. Classroom ,White board,Marker. 2.Projector. 3.PC with Internet

				Question. Group Study & Present their making topic.	
23.04.2026	28	7.Understand the network topologies.	7.1 Define topology. 7.2 Mention the difference between physical and logical topology.	Students will Know the working procedure of FDDI, advantages and disadvantages of using FDDI in networking. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base 1. Classroom ,White board,Marker. 2.Projector. 3.PC with Internet
	29		7.3 Describe the physical connection of bus, ring, star and hybrid topologies. 7.4 Mention the advantages and disadvantages of bus, ring, star and hybrid topologies.	Students will Know bus, ring, star and hybrid topologies. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base 1.Classroom,White board,Marker. 2.Projector. 3.PC with Internet
27.04.2026	30		7.5 Describe the factors to select a particular topology. 7.6Describe the	Students will Know the factors to select a particular topology.	Theory Base 1.Classroom,White board,Marker.

			logical topologies of a token ring network.	Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	2.Projector. 3.PC with Internet
	30	Review Class	Chapter:7 (Regarding students problem)	Students will learn How to Increase Question create Ability and Expand Answer from different source. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base/Practical 1. Classroom ,White board,Marker. 2.Projector. 3.PC with Internet
31.04.2026	31	3rd Class Test	Chapter 7	Students will Know bus, ring, star and hybrid topologies. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their	Theory Base 1.Classroom,White board,Marker. 2.Projector. 3.PC with Internet 4. Answer scripts.

				making topic.	
	32	8.Understand network protocols.	8.1 Define network protocol. 8.2 Describe the main elements of protocol.	Students will Know the network protocol. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base 1.Classroom,White board,Marker. 2.Projector. 3.PC with Internet
1.2.2026	33		8.3 Describe the characteristics of protocol. 8.4 Describe the functions of protocol.	Students will Know the characteristics of protocol. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base 1. Classroom ,White board,Marker. 2.Projector. 3.PC with Internet
	34		8.5 List different types of network protocols. 8.6 State the function of TCP/IP protocol.	Students will Know the function of TCP/IP protocol. Student will Create Question About the Topic. Also Student will create Answer from there	Theory Base 1. Classroom ,White board,Marker. 2.Projector. 3.PC with Internet



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				Group Study & Present their making topic.	
8.2.2026	35	Review Class	Chapter:8 (Regarding students problem)	Students will Know the function of TCP/IP protocol. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base/Practical 1. Classroom ,White board,Marker. 2.Projector. 3.PC with Internet
	36	4thQuez Test	Chapter 8	Students will learn How to Increase Question create Ability and Expand Answer from different source. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base 1. Classroom ,White board,Marker. 2.Projector. 3.PC with Internet 4. Answer scripts.
10.2.2026	37	9. Understand IP addressing.	9.1 Define Network Addressing. 9.2 State the format of physical address of a NIC.	Students will Know the internetwork connectivity devices,function of Routers, CSU/DSUs and	Theory Base 1. Classroom ,White board,Marker. 2.Projector.

				Gateways. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	3.PC with Internet
	38		9.3. Define IP. 9.4. Describe the IP address Formats of Class A, B, C, D, E with example.	Understand IP address. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base 1. Classroom ,White board,Marker. 2.Projector. 3.PC with Internet
15.2.2026	41	4th Class Test	Chapter 9	Students will learn How to Increase Question create Ability and Expand Answer from different source. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study &	Theory Base 1. Classroom ,White board,Marker. 2.Projector. 3.PC with Internet 4. Answer scripts.

				Present their making topic.	
	42	10.Understand Network Interface Cards (NIC)	10.1 State the role of NIC. 10.2 Describe the network address.	Students will know the NIC, network address. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base 1. Classroom ,White board,Marker. 2.Projector. 3.PC with Internet
20.2.2026	43		10.3 Mention the points that agree both the sending and receiving NICs. 10.4 State the importance of base memory address for NIC.	Students will know the sending and receiving, base memory address for NICs. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base 1. Classroom ,White board,Marker. 2.Projector. 3.PC with Internet
	44		10.5 Mention the important points to maintain the compatibility among NIC, bus and cables. 10.6 Describe the NIC related factors that enhanced the performance of	Students will know the maintain the compatibility among NIC, bus and cables. Student will Create Question About the Topic. Also Student will	Theory Base 1.Classroom,White board,Marker. 2.Projector. 3.PC with Internet

			network.	create Answer from there Question. Group Study & Present their making topic.	
	50	Review Class	Chapter:11 (Regarding students problem)	Students will learn How to Increase Question create Ability and Expand Answer from different source. Student will Create Question About the Topic. Also Student will create Answer from there Question. Group Study & Present their making topic.	Theory Base/Practical 1. Classroom ,White board,Marker. 2.Projector. 3.PC with Internet

Practical

Date	Practical No.	Job	Chapter	Learning Area	Learning Outcome	Supporting Equipment
9.01.2026	1.		1. Identify different types of guided communication media.	1. Twisted Pair Cable- Unshielded Twisted Pair (UTP), Shielded Twisted Pair (STP) 2. Co-axial Cable- Thick net and Thin net	Students will Practically See the all type of Cable and Connectopr. Student will Create Question About the Topic.	Practical Base 1. Cable-Twisted Pair Cable(Cat-6),Co-axil,Fiber. 2.Connector- RJ-45, BNC Connectors, MT-RJ, LC,

				Also Student will try to solve the problem. Group Study & Practically Show there Practical Performance.	MTP/MPO, MU, SFF,SC. 3. Network Interface Cards, Cable Tester and Crimper, Modems, Hubs, Repeater, Switch & Router
			3. Fiber Optic Cable- Single mode and Multi mode 4.Constructional features of UTP, STP, Co-axial Cable and Fiber Optic Cable.	Students will Practically see Cable, Console cable and Patch cable. Student will Create Question About the Topic. Also Student will try to solve the problem. Group Study & Practically Show there Practical Performance.	Practical Base 1. Cable-Twisted Pair Cable(Cat-6),Co-axil,Fiber. 2.Connector- RJ-45, BNC Connectors, MT-RJ, LC, MTP/MPO, MU, SFF,SC. 3. Network Interface Cards, Cable Tester and Crimper, Modems, Hubs, Repeater, Switch & Router
16.01.2026	2.	2.Identify different types of connectors	5. Twisted Pair Cable- RJ45 Connectors and their constructional features. 6. Co-axial Cable- BNC Connectors and their constructional features. 7. Fiber Optic Cable- MT-RJ and their constructional features.	Student will Create Question About the Topic. Also Student will try to solve the problem. Group Study & Practically Show there Practical Performance.	Practical Base 1. Cable-Twisted Pair Cable(Cat-6),Co-axil,Fiber. 2.Connector- RJ-45, BNC Connectors, MT-RJ, LC, MTP/MPO, MU, SFF,SC. 3. Network Interface Cards, Cable Tester and Crimper, Modems, Hubs, Repeater, Switch

					& Router
15.05.2026	3.	3. Identify other Network hardware's	8. Network Interface Cards/LAN cards/ Network Adaptor. 9. Cable Tester, Crimper and Accessories 10. Modems, Hubs, Repeater, Switch & Router	Student will Create Question About the Topic. Also Student will try to solve the problem. Group Study & Practically Show there Practical Performance.	Practical Base 1. Class room, Whiteboard, Marker. 2. Projector. 3. PC with Internet 4. All Cable, Cable Tester, Crimper and Accessories.
22.05.2026	4.	4. Configure TCP/IP to server and client PCs.	11. Make a straight through cable 12. Make a Cross over cable 13. Make a console cable	Student will Create Question About the Topic. Also Student will try to solve the problem. Group Study & Practically Show there Practical Performance.	Practical Base 1. Class room, Whiteboard, Marker. 2. Projector. 3. PC with Internet 4. All Cable, Cable Tester, Crimper and Accessories.

20.06.2026	5.	5. Establish a Peer to Peer/Workgroup LAN	14. Install Network Interface Card (NIC) into the PC 15. Check the MAC address of the Network Interface Card (NIC) 16. Connect straight cable or cross over cable among PCs, Hub or Switch 17. Configure the TCP/IP in each PC 18. Test the connectivity among PCs using Ping Command.	Student will Create Question About the Topic. Also Student will try to solve the problem. Group Study & Practically Show there Practical Performance.	Practical Base 1. Class room, Whiteboard, Marker. 2. Projector. 3. PC with Internet 4. All Cable, Cable Tester, Crimper and Accessories.
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19.04.2026	6.	6. Perform the task to Work with a Peer/Workgroup LAN environment for simple data communication.	19. Share the folders, Pen drive and Secondary memory. 20. Share a printer, DVD Drive or any other resources.	Student will Create Question About the Topic. Also Student will try to solve the problem. Group Study & Practically Show there Practical Performance.	Practical Base 1. Class room, Whiteboard, Marker. 2. Projector. 3. PC with Internet 4. All Cable, Cable Tester, Crimper and Accessories.
1.05.2026	7.	7. Establish a Client–Server Local Area Network.	21. Install Windows server 2012 into a server PC 22. Configure TCP/IP to server and client PCs 23. Perform the task to configure the Active Directory 24. Perform the task to configure The DNS. 25. Perform the task to configure the DHCP 26. Perform the task to Work with a Client–Server LAN environment for simple datacommunication and Administrative functions.	Student will Create Question About the Topic. Also Student will try to solve the problem. Group Study & Practically Show there Practical Performance.	Practical Base 1. Class room, Whiteboard, Marker. 2. Projector. 3. PC with Internet 4. All Cable, Cable Tester, Crimper and Accessories.

REFERENCE BOOKS

1. Data communications and Networking – Behrouz A. Forouzan.
2. Fundamentals of Communication - M. Shamim Kaiser and associates
4. Data and Computer Communications - William Stallings
5. Local Area Networking – S. K Basandra.
6. MCSE Windows & Networking Essential – Joe Casad