Course Title	Data Communication & Networks	**Course Code**	EE2007
Department	Department of Electrical Engineering (DEE)	**Campus**	Lahore
Knowledge Profile	Engineering Specialization (WK4)	**Credit Hrs.**	3+1
Knowledge Area	Telecommunication (KA05)	**Grading Scheme**	Relative
HEC Knowledge Area	Depth Electives	**Applicable From**	Fall 2025
SDG	4 | Quality Education	**PBL**	1
		CEP	1
Pre-requisite(s)			

Course Objective	To understand the foundations of data communication and layered network architecture. In particular, to appreciate physical layer, data link / MAC layer protocols, IP and TCP protocols and their application in evolving internet services

No.	Assigned Program Learning Outcome (PLO)
1	An ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
2	An ability to identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

A = Assignment, Q = Quiz, M = Midterm, F=Final

No.	Course Learning Outcome (CLO) Statements	Assessment Tools	Taxonomy Levels	PLO
1	**Describe** Internet architecture and network performance parameters.	Q1, M1	C2	1
2	**Explain** physical layer concepts in data communication including data rates, line coding schemes, and Shannon's capacity limits.	A1, M1	C2	1
3	**Analyze** the design principles involved in data link layer	A2, M1, M2	C4	1
4	**Demonstrate** the application of network layer protocols.	A3, Q2, M2, F	C3	2
5	**Explain** network applications and the model of transport layer	A4, Q3, F	C2	2

Text Books	**Title**	Computer Networks, 6th Edition
	Author	Andrew S. Tanenbaum
	Publisher	Pearson, 2021
Reference Books	**Title**	Computer Networking A Top-Down Approach
	Author	James F. Kurose and Keith W. Ross, 8th Edition
	Publisher	Pearson
	Title	Data Communications and Networking
	Author	Behrouz A. Forouzan, 5th Edition
	Publisher	McGraw Hill

Week	Course Contents/Topics	Chapter*	CLO*
01	Introduction to computer networks and reference models/network architectures	1 (1)	1
02	Data encapsulation and network performance parameters	1 (1)	1
03	Network applications and application layer protocols	7 (2)	2
04	The Transport Service	6 (3)	2
05	UDP, TCP	6 (3)	2
06	Network Layer	5 (4)	3
07	Internetworking; network layer in the Internet (IP)	5 (4)	3
08	Routing Algorithms	5 (4)	3
09	Introduction to the data link layer	3 (5)	4
10	Error detection and correction	3 (5)	4
11	ARQ Protocols	3 (5)	4
12	Multiple Access Protocols	4 (5)	4
13	Ethernet	4 (5)	4
14	Wireless LAN/Broadband Wireless	4 (6)	4
15	Physical Layer; fundamental concepts and theoretical basis for data transmission; guided/wireless transmission	2	5
16	Multiplexing; PSTN and GSM	2	5

***Reference book chapters are given in brackets**

Assessment Tools	Weightage
Quizzes, Assignments	20.0%
Midterm (I+II)	30.0%
Final Exam	50.0%