

Course Code	PIT21E201J	Course Name	COMPUTER NETWORKS	Course Category	D	Discipline Elective Courses	L	T	P	C
							3	0	2	4

Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil
Course Offering Department	Computer Applications	Data Book / Codes/Standards	Nil		

Course Learning Rationale (CLR):	The purpose of learning this course is to,	Learning	Program Learning Outcomes (PLO)
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CLR-1 :	<i>Understand the evolution of computer networks using the layered network architecture</i>	1	2	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CLR-2 :	<i>Understand the addressing concepts and learn networks devices</i>																		
CLR-3 :	<i>Design computer networks using subnetting and routing concepts</i>																		
CLR-4 :	<i>Understand the error types , framing, flow control</i>																		
CLR-5 :	<i>Understand the various Medium Access Control techniques and also the characteristics of physical layer functionalities</i>																		
CLR-6 :	<i>Understand basic network administration</i>																		

Course Learning Outcomes (CLO):	At the end of this course, learners will be able to:	Level of Thinking	Expected Proficiency	Expected Attainment	Disciplinary Knowledge	Critical Thinking	Problem Solving	Analytical Reasoning	Research Skills	Team Work	Scientific Reasoning	Reflective Thinking	Self-Directed Learning	Multicultural	Ethical Reasoning	Community	ICT Skills	Leadership Skills	Life Long Learning
CLO-1 :	<i>Acquire the basics of computer network and its architecture</i>	3	80	70	L	H	H	H	H	M	-	H	M	H	-	H	H	-	M
CLO-2 :	<i>Acquire the knowledge of various networks devices and addressing methods</i>	3	85	75	M	M	H	H	H	-	-	M	M	M	-	H	M	-	L
CLO-3 :	<i>Ability to design the network routing methods</i>	3	75	70	M	M	H	H	H	-	-	M	M	L	-	H	M	-	H
CLO-4 :	<i>Acquire the various error codes and framing concepts</i>	3	85	80	L	L	H	H	H	M	-	M	L	H	M	H	M	-	-
CLO-5 :	<i>Ability to understand the physical layer functions and components</i>	3	75	70	H	H	H	H	H	L	-	M	H	L	L	H	-	L	-
CLO-6 :	<i>Ability to design a computer network using a switch and router</i>	3	85	80	L	H	H	H	H	H	-	M	M	L	H	H	-	L	-

Duration (hour)		15	15	15	15	15
S-1	SLO-1	A Communications Model	Transmission Terminology	Asynchronous Transmission	Frequency Division Multiplexing Synchronous	Local Area Network Overview-Background
	SLO-2	A Data Communications Model- Networks	Frequency, Spectrum, And Bandwidth	Synchronous Transmission	Time Division Multiplexing	Topologies And Transmission Media
S-2	SLO-1	Operation of TCP and IP	Data And Signals- -	Error Correction-	Circuit-Switching Networks	IEEE 802 Reference Model
	SLO-2	TCP	Analog And Digital Transmission	Block Code Principles	Circuit-Switching Concepts	Logical Link Control- LLC-
S-3	SLO-1	UDP Overview	Transmission Impairments	Flow Control	Packet-Switching Principles	Protocol- BRIDGES
	SLO-2	TCP/IP Applications	Attenuation And Attenuation Distortion	Stop-And-Wait Flow Control	Advantage of Packet Switching	Functions Of A Bridge-
S 4-5	SLO-1	Laboratory 1: Familiarization with configuring and installing a LAN using packet tracer	Laboratory 4: To study different types of transmission media	Laboratory 7: Error Detecting Code Using CRC-CCITT (16-bit)- Java /C/C++ Program	Laboratory 10: Study of switches, bridges using Cisco packet tracer	Laboratory 13: Designing various topologies using cisco packet tracer
	SLO-2					
S-6	SLO-1	The OSI Model	Delay Distortion	Stop-And-Wait Flow Control Delay Distortion	Comparison Of Circuit Switching And Packet Switching X.25	Fixed Routing- The Spanning Tree Approach- Frame Forwarding-
	SLO-2	Role play and activity based learning for understanding OSI model Standardization within a Protocol	Noise Guided Transmission Media	Error Control	Frame Relay-Background	Electronic Mail

S-7	SLO-1	Architecture - Standardization within the OSI Framework Service Primitives and	Twisted Pair- Physical Description- Applications- Unshielded And Shielded Twisted Pair	Stop-And-Wait ARQ	Frame Relay Protocol Architecture- User Data Transfer	SMTP And MIME- Simple Mail Transfer Protocol (SMTP)
	SLO-2	Parameters- Traditional Internet-Based Applications Multimedia- Media Types	Coaxial Cable- Physical Description- Applications- Transmission Characteristics	Go-Back-N ARQ HDLC	Routing In Switched Networks	Basic Electronic Mail Operation
S-8	SLO-1	Multimedia Applications Standardization within a Protocol	Optical Fiber- Physical Description Applications- Transmission Characteristics	High-Level Data Link Control (HDLC)	Routing Strategies	SMTP Overview- Connection Setup-
	SLO-2	Architecture Standardization within the OSI Framework	Noise- Guided Transmission Media Wireless Transmission-	Basic Characteristics Frame Structure	Fixed Routing Flooding	Mail Transfer
S 9-10	SLO-1	Laboratory 2: Experimenting with network protocols for achieving communication between computers using packet tracer	Laboratory 5: Interconnection software for communication between two different network architectures-using packet tracer	Laboratory 8: Case study submission for: Sliding-Window Flow Control & Stop-And-Wait Flow Control	Laboratory 11: To configure network security using two routers by blocking ICMP ping request.- CISCO packet tracer	Laboratory 14 :To configure Internet Access/Implementation using CISCO packet tracer
	SLO-2					
S-11	SLO-1	Service Primitives Parameters	Antennas- Transmission Media control	Address Field- Data Field	Random Routing Switched Networks	Multipurpose Internet Mail Extensions (MIME) Benefits MIME
	SLO-2	Internet based	Wireless connection	Basic Characteristics data		Advantage MIME

S-12	SLO-1	Traditional Internet-Based Applications	Terrestrial Microwave- Physical Description- Applications	Control Field	Adaptive Routing	Messages transmission
	SLO-2	Introduction of network layers	Feature of Optical Fiber	Error - detection	Hub, switch	Request Messages
S-13	SLO-1	OSI reference model	Feature of Transmission Media	Error Correction- code	Repeater	Response Messages
	SLO-2	Layers in the OSI Model Comparison of Layers	Advantage coaxial cable	Over view of Frame work Advantage frame work	Gateway routers	Protocol Architecture Bridge Protocol Architecture
S 14-15	SLO-1	Laboratory 3:Creating a LAN using packet tracer	Laboratory 6: Using packet tracer to connect a network with different types of media connection	Laboratory 9: SIMULATION OF STOP AND WAIT PROTOCOL using NS/2 or any other tool	Laboratory 12: Case study submission for routing	Laboratory 15:Web programming using HTML
	SLO-2					

Learning Resources	1. "Data And Computer Communications" - William Stallings -Eighth Edition 2.BehrouzA.Forouzan,(2010), "Data Communications and Networking", 5 th Edition 3."DataCommunicationsandNetworking"BehrouzA.Forouzan,"5thedition,July1,2010,ISBN:9780073376226 4.WilliamStallings,(2010), "Data and Computer Communications", Ninth Edition
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Learning Assessment											
Bloom's Level of Thinking		Continous Learning Assessment(50% Weightage)								Final Examination (50% weightage)	
		CLA – 1 (10%)		CLA – 2 (10%)		CLA – 3 (20%)		CLA – 4# (10%)			
		Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice
Level 1	Remember	20%	20%	15%	15%	15%	15%	15%	15%	15%	15%
	Understand										
Level 2	Apply	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Analyze										
Level 3	Evaluate	10%	10%	15%	15%	15%	15%	15%	15%	15%	15%
	Create										
	Total	100 %		100 %		100 %		100 %		100%	

CLA – 4 can be from any combination of these: Assignments, Seminars, Scientific Talks, Mini-Projects, Case-Studies, Self-Study, MOOCs, Certifications etc.,

Course Designers		
Experts from Industry	Experts from Higher Technical Institutions	Internal Experts
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