Course Code	21CSC302J	Course Name	COMPUTER NETWORKS	Course Category	C	PROFESSIONAL CORE	L	T	P	C
							3	0	2	4

Pre-requisite Courses	*Nil*	Co- requisite Courses	*Nil*	Progressive Courses	*Nil*
Course Offering Department	*School of Computing*	Data Book / Codes / Standards		*Nil*	

Course Learning Rationale (CLR):	*The purpose of learning this course is to:*
CLR-1:	*define the layered network architecture*
CLR-2:	*produce knowledge in IP addressing*
CLR-3:	*identify suitable routing algorithms based on geographical location of the devices*
CLR-4:	*apply the concept of Error detection to identify the errors in data*
CLR-5:	*exploring reliable and unreliable protocols*

Course Outcomes (CO):	*At the end of this course, learners will be able to:*	Program Outcomes (PO)												Program Specific Outcomes		
		1	2	3	4	5	6	7	8	9	10	11	12			
		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern Tool Usage	The engineer and society	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning	PSO-1	PSO-2	PSO-3
CO-1:	*apply the knowledge of communication*	*3*	-	-	-	*3*	-	-	-	-	-	-	-	*1*	-	-
CO-2:	*construct the network using addressing schemes*	*3*	-	-	*2*	-	-	-	-	-	-	-	-	*1*	-	-
CO-3:	*design and implement the various Routing Protocols*	*3*	-	-	*2*	*3*	-	-	-	-	-	-	-	*1*	-	-
CO-4:	*identify and correct the errors in transmission*	*3*	-	-	-	-	-	-	-	-	-	-	-	*1*	-	-
CO-5:	*analyze the services provided by Transport and Application layers*	*3*	-	-	-	-	-	-	-	-	-	-	-	*1*	-	-

Unit-1 - Introduction to Networks — ***15 Hour***

Network Types: LAN, MAN, PAN, WAN - Network Topology : BUS, STAR, RING, MESH, HYBRID - Switching : Circuit Switching, Packet Switching - OSI Layered Architecture - TCP/IP Model - Physical Layer Overview - Latency, Bandwidth, Delay - Guided Media : Twisted pair, Coaxial cable, Fiber optic cable - Unguided Media : Radio waves, Microwaves, Infrared.
Lab 1: Introduction to Packet Tracer, Peer to Peer communication, study of cables and its colour codes
Lab 2: Implementation of Network Topologies
Lab 3: Router Configuration (Creating Passwords, Configuring Interfaces)

Unit-2 - Addressing — ***15 Hour***

IPV4 Addressing - Address space - Classful addressing - Subnet mask - FLSM - Classless Addressing - VLSM – NAT – Super netting - Network Devices: Hub, Repeaters, Switch, Bridge, Router
Lab 4: IP addressing and Sub netting (VLSM)
Lab 5: Static and Default Routing
Lab 6: NAT Configuration

Unit-3 - Routing — ***15 Hour***

Forwarding of IP Packets — Static and Default Routing — Unicast Routing Algorithms: Distance Vector Routing, Link State Routing, Path Vector Routing — Protocols: RIP V1, RIP V2, OSPF, BGP, EIGRP — Multicasting Basics — IPV6 Addressing Basics
Lab 7: Implementation of RIP version 1
Lab 8: Implementation of RIP version 2
Lab 9: Implementation of Single Area OSPF

Unit-4 – Medium Access Control	***15 Hour***
ALOHA ,CSMA/CD, CSMA/CA, Ethernet, Token Ring - Flow Control :Stop and Wait, Sliding Window - Error Control: Stop and Wait ARQ, Sliding Window ARQ - Error Detection : Parity Check, Checksum, CRC - Error Correction: Hamming codes - Data-Link Layer Protocols : HDLC, PPP. *Lab 10: Implementation of Multi Area OSPF* *Lab 11: PPP Configuration* *Lab 12: HDLC Configuration*	
Unit-5 – Transport and Application Layer Protocols	***15 Hour***
Port Numbers — User Datagram Protocol — Transmission Control Protocol — WWW and HTTP — FTP — Email –Telnet – DNS. *Lab 13: Implementation of BGP* *Lab 14: Implementation of EIGRP* *Lab 15: Telnet Configuration*	

Learning Resources	1. *Behrouz A. Forouzan, "Data Communication and Networking",5th ed.,2010* 2. *Bhushan Trivedi, " Data Communication and Networks" 2016*	3. *William Stallings, " Data and Computer Communications",9th ed.,2010* 4. *Todd Lammle, "CCNA Study Guide",7th ed.,2011*

Learning Assessment

	Bloom's Level of Thinking	Continuous Learning Assessment (CLA)				Summative Final Examination (40% weightage)	
		Formative CLA-1 Average of unit test (45%)		Life-Long Learning CLA-2 (15%)			
		Theory	Practice	Theory	Practice	Theory	Practice
Level 1	*Remember*	*20%*	*-*	*-*	*20%*	*20%*	*-*
Level 2	*Understand*	*40%*	*-*	*-*	*40%*	*40%*	*-*
Level 3	*Apply*	*40%*	*-*	*-*	*40%*	*40%*	*-*
Level 4	*Analyze*	*-*	*-*	*-*	*-*	*-*	*-*
Level 5	*Evaluate*	*-*	*-*	*-*	*-*	*-*	*-*
Level 6	*Create*	*-*	*-*	*-*	*-*	*-*	*-*
	Total	*100 %*		*100 %*		*100 %*	

Course Designers

Experts from Industry	Experts from Higher Technical Institutions	Internal Experts
1. *Mr. Srinivasan Varadharajan, Senior Principal Software Engineer, Manhattan Associates, Atlanta, United States*	1. *Dr. I.Joe Louis Paul, Associate Professor, SSN College of Engineering, TamilNadu*	1. *Dr. S. Metilda Florence, SRMIST*