

Branch Name:	Artificial Intelligence & Data Science
Program Code:	ET108
Semester/Year:	Semester VI/ Third Year
Course Name:	Computer Network and Internet Protocol (Professional Elective –III)
Course Code:	2ET1080604T
Pre-requisite:	Fundamental of basic computer topologies, types of networks, basic networking protocols

Course Objective:

1. Describe various protocols, models in networks.
2. Illustrate use of Subnets, Ipv4 and Ipv6 in computer networks.
3. Identify and solve network operational problems.

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								
					Theory (Marks)				Practical (Marks)				Total (Marks)
	SEE		CCE		SEE		CCE						
	L	T	P	Total	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
3	3	-	-	3	24	60	16	40	-	-	-	-	100

Subject Contents

Sr. No	Topic	Total Hours	Weightage (%)
1	Introduction to Data Communication and Networking Data communication, use of Networks, Internet Protocols and standards, OSI model, TCP/IP model. Types of Transmission Media: Guided Media, Un Guided Media, Difference between Layer 2 and Layer 3 Switches	7	20
2	Physical Layer Transmission media (Twisted pair, Coaxial cable, Fiber optic cable), Wireless Medium as Physical Layer (Electromagnetic Spectrum, ISM Band, Light wave Transmission), Circuit switching, DSL technology, Cable modem.	5	10
3	Data Link Layer Services to N/W layer, Framing, Bit Stuffing, Character Stuffing, Error control, Flow control mechanism, stop & wait, Go-back-N, Selective repeat, data link layer protocol: HDLC, PPP.	6	10
4	Medium Access Layer Channel allocation problem, Multiple Access, CSMA, CSMA/CD, CSMA/CA.	5	10
5	Local Area Network Ethernet, Fast Ethernet, Gigabit Ethernet, Wireless LAN, Blue tooth, Zigbee, Connecting devices- Repeaters, Hub, Bridges, Switch, Router, Gateways, Broadband Wireless Networks	6	15

6	Network Layer Packet Switching, Virtual circuits and datagram, Static and Dynamic Routing Algorithms (Optimality principle, Static Routing Algorithms: Shortest Path, Flooding, Dynamic routing Algorithms: Distance Vector, Link state routing.), Congestion Control, IP Addressing, CIDR & NAT, IP layer protocols (ICMP, ARP, RARP, DHCP, BOOTP), IPv4 and IPv6.	7	10
7	Transport layer and Applications Layer Elements of Transport protocols - TCP & UDP, DNS- Domain Name System, E-mail, FTP, HTTP, WWW, Firewall, Network Security IP Protocol IPv4: Characteristics, Advantages and Disadvantages, Packet structure, Address classes, Subnet & masking, Reserved Address, IPv6: Characteristics, Addressing modes, Address types, Special Address, DNS, Email, FTP, HTTP, Advantages and Disadvantages, Difference between IPv4 and IPv6	8	25

List of Reference Books:

1. Data Communication and Networking, Forouzen, Tata McGraw Hill
2. A. S. Tanenbaum (2003), Computer Networks, 4th edition, Pearson Education/ PHI, New Delhi, India
3. An Engineering Approach to Computer Networks-S.Keshav, 2nd Edition, Pearson Education
4. Understanding communications and Networks, 3rd Edition, W.A. Shay, Cengage Learning.
5. Computer and Communication Networks, Nader F. Mir, Pearson Education
6. Computer Networking: A Top-Down Approach Featuring the Internet, James F. Kurose, K.W. Ross, 3rd Edition, Pearson Education.

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Understand various networking devices	1. Remembering 2. Understanding
CLO2	Learn data representation of data link layer	2 Understanding 5. Evaluate
CLO3	Learn transport layer protocols	4. Analyze
CLO4	Learn IP protocols: IPv4 and IPv6	2 Understanding 5. Evaluate

Mapping of CLOs with POs & PSOs

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4
CLO1					L	H						H	H	M	L	H
CLO2	H		M	M	L			L		L	L	M		M	L	
CLO3		M	L		L			L						H		L
CLO4	H	M			L			L					L		M	H

H: High, M: Medium, L: Low