CP208: Computer Networks

Teaching Scheme			Credits	Marks Distribution				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE	CE	ESE	CE	
4	0	2	6	70	30	30	20	150

Course Content:

Sr. No	Topics	Teaching Hrs.
1	**Introduction:** Network objectives and applications; network structure and architectures: the OSI and TCP/IP models, Functions of each layer; Network services: connection oriented and connection less; Network standardization; Performance metrics like throughput, delay and jitter; different network devices like hub, bridge, switch, router, gateway.	05
2	**Physical layer:** Fundamentals of data communication; notion of bandwidth and bit error rate; transmission media: guided and unguided; analog and digital transmission; physical network topologies: bus, ring, mesh, star; transmission modes: simplex, half duplex, full duplex.	05
3	**Data link layer, Medium Access Control:** Multiple access protocols: CSMA/CD, collision free protocols; IEEE standard 802 for LANs; comparison of LANs.	10
4	**Data link layer: Logical Link Control:** Design issues; flow control and error control; techniques for error detection and correction; Different mechanisms for flow control and error control: positive/negative acknowledgements stop & wait ARQ, sliding window protocols like go-back-n ARQ and selective repeat ARQ.	10

5	**Network layer:** Design issues; addressing at network layer: IPv4 and IPv6; sub netting; routing algorithms; congestion control; concept of internetworking; notion of quality of service (QoS).	10
6	**Transport layer:** Design Issues; connection management; Connection less transport using UDP and connection oriented transport using TCP; congestion control at transport layer.	10
7	**Application layer:** Design issues; Client-server and Peer-to-Peer application architectures; Network applications for file transfer (FTP), electronic mails (SMTP), accessing remote terminals (telnet), accessing the world wide web (HTTP), domain name system (DNS), voice over IP.	10
	Total Hrs.	**60**

Reference Books:

1. Andrew S Tanenbaum, "*Computer Networks*", Pearson Education.
2. Behrouz A Forouzan, "*Data Communication and Networking*", McGraw Hill.

   (E-Book available on the BVM intranet)
3. William Stallings, "*Data and Computer Communication*", Pearson Education.
4. James Kurose and Keith Rose, "*Computer Networking: A Top Down Approach*", Pearson Education.
5. Larry L Peterson and Bruce S Davie, "*Computer Networks: A Systems Approach*", Elsevier.