

## Detailed Course Syllabus

### CSE 801 Communication Protocols and Internet Architecture

**Design, analysis, and implementation of networks and protocols:** Internet Architecture & Performance Parameters, TCP/IP, TCP Tahoe, TCP Reno, TCP New Reno, TCP CUBIC, Network Address Translation (NAT), Dynamic Host Configuration Protocol (DHCP), Internet Protocol Security (IPsec), Internet Control Message Protocol (ICMP), IPv4 and IPv6, Concepts of routing (Bellman-Ford and Dijkstra algorithms), Open Shortest Path First (OSPF), Interior Gateway Routing Protocol (IGRP), Enhanced Gateway Routing Protocol (EIGRP), and Border Gateway Protocol (BGP), Software Defined Networking, Virtual Network Function, OpenFlow Protocol and Network Function Virtualization. **Application layer protocols:** Domain Name System (DNS), Simple Mail Transfer Protocol (SMTP), HTTP 1.0 to HTTP 3.0, Cookies, Webcaching, Proxy, Content Distribution Network, Bit Torrent, DASH Protocol, multimedia protocols for voice and video. **Design and Analysis of Networks:** LAN architecture and design, internetworking using switches and routers, the design and analysis of both private networks Internet, Zero trust network architecture. Network quality of service, voice and video on the Internet, policy-based networks, and Introduction to wireless networks – IEEE 802.11 wireless LAN, Adhoc and infrastructure mode networks protocols.

#### **Textbook and Reference:**

##### **Textbook:**

- *J. F. Kurose and K.W. Ross, Computer Networking: A Top Down Approach*, 8th Edition, Pearson Publications, 2020.

##### **References:**

- *Andrew Tanenbaum & David Wetherall, Computer Networks*, Fifth Edition, Pearson, 2010.