| CS352 | COMPUTER NETWORKS | PCC | 4 – 0 – 0 | 4 Credits |
|---|---|---|---|---|

**Pre-requisites:** CS302: Operating Systems

**Course Outcomes:** At the end of the course the student will be able to:

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|---|---|
| CO1 | Understand OSI and TCP/IP models |
| CO2 | Analyze MAC layer protocols and LAN technologies |
| CO3 | Design applications using internet protocols |
| CO4 | Implement routing and congestion control algorithms |
| CO5 | Develop application layer protocols |

**Mapping of course outcomes with program outcomes**

| Course Outcomes | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | | 2 | 2 | | | | | | 2 |
| CO2 | | 2 | | | | | | | 2 |
| CO3 | 2 | 2 | 2 | 2 | | 2 | | | 2 |
| CO4 | 2 | 2 | | 2 | | | | | 2 |
| CO5 | 3 | 3 | 3 | 3 | | | | | 2 |

**Detailed syllabus:**

Introduction – network architecture - protocol implementation issues - Quantitative performance metrics - network design. Reference models- The OSI Reference Model- The TCP/IP Reference Model - A Comparison of the OSI and TCP/IP Reference Models-

Low –level network technologies-Ethernet to token ring to wireless-Issues wit data link protocols-Encoding framing and error detection and correction-sliding window protocol-Medium access control sub layer-Basic models of switched networks-Datagrams versus virtual circuits-Switching technologies-Switched Ethernet and ATM- The design of hardware based switches

Network layer – network layer design issues-Touting algorithms-Congestion control algorithms-Internetworking- The network layer in the internet-Internet Protocol (IP).- Unicast, multicast, and inter domain routing

Transport layer-Elements of transport protocol-Congestion control – Performance issues-The Internet's Trans-mission Control Protocol (TCP)- Remote Procedure Call (RPC)- – Implementation semantics of RPC -client-server applications- The Real-time Transport Protocol(RTP) - Multimedia applications- Congestion control and resource allocation.-congestion control in TCP–UDP –Quality of service in IP.
Application layer-Domain name server-World wide web-Hyper text transfer protocol-Presentation formatting and data compression- Network security- crypto graphic tools- the problems of key distribution – Geveral authentication techniques - Pretty Good Privacy (PGP)- Secure Shell (SSH),- IP Security architecture(IPSEC).-Firewalls .

Network applications and the protocols- File transfer protocol - email and the Web, multimedia applications such as IP telephony and video streaming- Overlay networks like peer-to-peer file sharing and content distribution networks- Web Services architectures for developing new application protocols.

**Reading:**


1. Larry L Peterson, Bruce S Davis, *Computer Networks*, 5th Edition, Elsevier, 2012.
2. Andrew S. Tanenbaum, David J Wetherall, *Computer Networks*, 5th Edition, Pearson Edu, 2010.