

ECE 4833/CSE 4153 - Data Communications and Computer Networks

Textbook: (i) Communication Networks, Leon-Garcia and Widjaja, 2n Ed., McGraw Hill, 2004

(ii) Computer Networks, 4th Edition, by Andrew S. Tanenbaum

1. Introduction
 - Communication Networks and Services
 - Applications and Layered Architectures: OSI and TCP/IP reference models
2. Physical Layer --> Digital Transmission Fundamentals
 - Digital representation of Information
 - Digital Communications
 - Modems and Digital Modulation
 - Error Detection and Correction
3. Circuit-Switching Networks
 - Multiplexing
 - SONET and Transport Networks
 - Circuit Switches
 - Telephone Network
 - Singaling
4. Peer-to-Peer Protocols and Data Link Layer
 - Peer-to-Peer Protocols
 - Peer-to-Peer Protocols and Service Models
 - ARQ Protocols and Reliable Data Transfer Service
 - Data Link Control
 - Framing
 - Point-to-Point Protocol
 - HDLC Data Link Control
5. Medium Access Control Protocols and Local Area Networks
 - Medium Access Control Protocols
 - Aloha, CSMA/CD
 - Channelization
 - LAN
 - Ethernet
 - Token-Ring
6. Packet-Switching Networks
 - Topology
 - Datagrams and Virtual Circuits
 - Routing
 - Traffic Management
7. TCP/IP
 - IPv4/IPv6
 - UDP / TCP
 - Routing
8. ATM Networks
9. Advanced Network Architectures
 - IntServ/DiffServ
 - Overlay and Peer-to-Peer models
 - MPLS
 - Real-Time Transport Protocol