

## **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