

## CNT 5008 Computer Networks

**Credits:** 3 credits

**Text book, title, author, and year:** Data Communications and Networking, 4th ed., Behrouz A. Forouzan, McGraw-Hill, 2006, (ISBN: 0073250325).

**Reference materials:** N/A

### Specific course information

**Catalog description:** This course provides an in-depth study of the Internet architecture and its main communication protocols. It covers common media access control protocols for wired and wireless networks, the IP protocol at the network layer, and the UDP, TCP, and SCTP end-to-end transport protocols. Advanced topics are congestion control and TCP socket programming. Hands on work with a network simulator will let students explore network topologies, protocols, and measure application performance.

**Prerequisites:** Prerequisites: COP 3530 Data Structures and Algorithm Analysis

### Specific goals for the course:

1. Demonstrate understanding of the layered architecture of communication protocols
2. Demonstrate understanding of the IP addressing and networking architecture 1.
3. Explain the working of the TCP/IP protocols .
4. Program client and server application using TCP sockets on Linux operating system .
5. Simulate network applications on complex network topologies and analyze application performance.

### Brief list of topics to be covered:

1. Introduction
  2. Network Models
  6. Multiplexing (6.1)
  8. Switching (8.1-8.3)
  12. Multiple Access
  13. Wired LANs: Ethernet
  14. Wireless LANs (14.1 IEEE 802.11)
- TCP Socket Programming
15. Connecting LANs, Backbone Networks, and VLANs
  19. Network Layer: logical Addressing
  20. Network Layer: Internet Protocol
  21. Network Layer: Address Mapping, Error Reporting and Multicasting

22. Network Layer: Delivery, Forwarding, Routing

23. UDP, TCP, SCTP

IP Congestion Control (24. Congestion Control and QoS)

OPNET IT Guru Network Simulator