Course number and name: CS 01210: Introduction to Computer Networks and Data Communications

Credits and contact hours: 3 credits / 3 contact hours

Instructor’s or course coordinator’s name: Mike Chu


Specific course information

Catalog description: This is an introductory computer networks course for students that are not majoring or minoring in computer science. This course will examine the basics of data communication and computer networks and will cover such topics as history and evolution of data communications, layered network architectures, physical and data link layers, introduction to internetworking, the Internet, IP protocols, basics of TCP and UDP transmission protocols, standard network applications and basics of network security, network utility software, and configuring local area networks in a popular operating system.

Prerequisites: None

Specific goals for the course

1. The student will understand layered architectures.
2. The student will model the performance of network components or systems.
3. The student will understand the operation of important application, transport and network layer protocols.
4. The student will describe some basic security issues.

Required list of topics to be covered

1. Networking models (OSI and IP)
2. Network media (wired, optical, and wireless)
3. Network Architectures and topologies (PAN, LAN/WAN, DMZ, Enclaves, VLAN, NAT, subnetting, supernetting)
4. Common Network Devices and their role in the network. (Routers, Switches, Hosts, VPNs, Firewalls)
5. Network Protocols introduction (IP, TCP, UDP, ICMP)
6. Network Services and protocols introduction (DNS, NTP, VLAN, etc.)
7. Network Applications and protocols introduction (SMTP, HTTP, VoIP, SSH, etc.)
8. Use of basic network administration tools
9. Overview of Network Security Issues
10. Network switching (Ethernet)
a. ARP and RARP
11. IPv4 suite
   a. IPv4 Addressing
12. IPv6 Suite
   a. IPv6 Addressing
13. Routing in IPv4 and v6
   a. Routing tables and metrics
14. Network Naming
   a. DNS
   b. NetBIOS
15. Layered services design