Course Description

Prerequisite: ENPM 602: Data Networks

Course Objective:

- Describe how IP datagram travels through the internet and are routed from the source to the destination
- Introduce the two transport protocols: UDP and TCP, the proper context to use each one, and related parameters and issues
- Cover some other protocols, closely related to the TCP/IP that are responsible for the seamless operation of the Internet

Learning outcomes: The students will be able to understand the fundamentals of Internet protocol (IP), User Datagram Protocol (UDP), and Transmission Control Protocol (TCP). They will be provided with the tools to monitor and analyze the packets on the wire, understand how the packets are routed end-to-end through the network, and the role of parameters that determine the performance of the transmission. They will also learn about all the side protocols that enable users to seamlessly communicate through the network.

Grading:
- Homework: 30%
- Midterm exam: 30%
- Final exam: 40%

Required/Recommended Textbooks

By Douglas Comer
ISBN# 9780136085300
Required? Yes

TCP/IP Illustrated, Vol. 1: The protocols (Edition 2)
By Kevin Fall, Richard Stevens
ISBN# 978-0321336316
Required? N
Course Outline

- Address resolution protocol (ARP)
- Error and control messages (ICMP)
- Internet Protocol (IP)
- Addressing classes
- Classless and subnet address extensions (CIDR)
- User datagram protocol (UDP)
- Transport Control Protocol (TCP)
- TCP performance
- Flow control
- Congestion management
- Routing protocols
- Internet multicasting (IGMP)
- Network address translation (NAT)
- IPv6
- Domain Name Service (DNS)
- Virtual LANs (VLAN)
- Applications (Telnet, FTP, Email, …)
- The Socket Interface