ECE 466/566
Advanced Computer Networking

Winter 2006

Instructor: Dr. Thinh Nguyen
Credits: 4
Meeting Time: 2 90-minutes per week
Location:
Office Hour: TR 2:50-3:50 PM

Course Description:

This course covers the advanced networking concepts. These include source/channel coding, queuing theory, router design, network architectures (Intserv, DiffServ, MPLS), multimedia protocols (TFRC, RTP), overlay networks, network security, and advanced wireless networking.

Prerequisites:

By course: ECE 465 or instruction’s permission.
By topic: Basic knowledge of computer organization, programming skills.

Topics:

- Communication Fundamentals (Physical Layer)
  - Attenuation, Distortion, Dispersion, Noise
  - Modulation
- Introduction to queueing theory (depending on available time)
  - Basic probability
  - M/M/1 queues
  - Networks of M/M/1 queues
- Network architectures and designs for quality of services
  - ATM
  - Integrated Services
  - Differentiated Services,
  - MultiProtocol Label Switching (MPLS)
  - Traffic Engineering.
- Streaming protocols
  - RTP
  - RSTP
  - TFRC
  - RAP
  - SIP
- Multimedia Coding for Networks
  - Robust audio/video compression
- Forward Error Correction
- Multimedia communication systems:
  - H.323
  - Multicast
  - Video overlay multicast
- Network Securities
  - SSL,
  - IPSec
  - Privacy, Authentication
- Wireless Technologies
  - Wi-Max
  - Mobil Adhoc/Mesh Networks
  - Sensor Networks

**Grading Policy:** 30% written and programming assignments.
20% quiz 1
20% quiz 2
30% Final project