Case studies: learning through examples

Hands-on experience through programming assignments/projects

Course will focus on both theory and practice of computer network design, networks, and their protocols, services and applications

Learn the design and implementation of computer communication

Course Goals
References

- Available from the textbook Annuale (estore.alex.uMass.edu, 413) 545-3570
- Computer Networks, 2nd ed., A. Tanenbaum
- Jim Kurose and Keith Ross
  Computer Networking: A Top-Down Approach Featuring the Internet

Recommended texts

Course Materials

Course Grade

- Two exams (one midterm, one final) - 40%
- Programming assignments/Project - 40%
- Homeworks - 20%

Course Requirements

- Good programming skills in a high level programming language (C, C++, or Java)
- Basics of Operating Systems and Computer Architecture

Graduate level course in Computer Networks
Course Outline

- Mixed media in networks
- Different transmission media

Physical Layer
- Brief history
- Layered network architecture
- Networks, network applications

Introduction

Course Materials

Broadcast email list: cs653@cs.umass.edu

- All class materials (slides, handouts, homeworks) will be posted on the class page
- Course web site: http://www.cs.umass.edu/~shenoy/courses/653

Video tapes of each lecture are on reserve in Physical Sciences Library
Course Outline

Transport Layer

- Internet and Interdomain routing
- Internet Protocol (IPv4, IPv6), ICMP
- Routing protocols
- Service models

Network Layer

- Network Interface: OSI issues
- Hubs and Bridges
- Switched LANs, ATM LANs
- Address resolution: ARP
- Multiple access Ethernet: IEEE 802.3
- Point-to-point DLC: PPP

Data Link Layer, LANS

- Case studies: TCP, UDP, ATM, ABR
- Quality of Service
- Configuration and flow control
- Unreliable and reliable data transfer
Future Directions
- Case studies: PGP, IPsec
- Public key encryption
- Authentication
- Cryptography
- Network management issues, SNMP

Multimedia Networking
- Case studies: DNS, HTTP, FTP, e-mail
- Application requirements

Application Layer

Course Outline