CEN 444
Computer networks

Dr. Mohamed Abd-Eldayem

Dr. Kashif Saleem

- Assistant Professor

- Center of Excellence in Information Assurance, King Saud University

- Email: ksaleem@ksu.edu.sa

- Office No.: 2, Office Phone : 4696458

- Home page: http://fac.ksu.edu.sa/ksaleem

1. Course Goals

Student will understand :

- The basic principles of computer networks
- The objectives and applications
- The Internet and its protocols
- The key design principles used to build networks and the Internet
- Network Reference Model
- Data Link Layer
  - Ethernet
  - Token Ring
- Hubs & Switches

Course Description

- This course will provide students with a thorough understanding of the basic principles of computer networks,

- Introductory course on computer networks and their protocols.

- the design philosophy of the Internet, and the details of network and Internet protocols.

- Students who complete this course will be able to describe in detail the operations of networks and Internet protocols.

3. Reference Books

- A. S. Tanenbaum (text book)
  - "Computer Networks", 4rd Ed., Prentice-Hall, '03.
- Panko's *Business Data Networks and Telecommunications, 4th edition*
- J. Kurose and K. Ross
  - "Computer Networking: A Top-Down Approach Featuring the Internet" 1st Ed., Addison-Wesley, '00
- W. Stallings
  - Computer Networking with Internet Protocols;
- W. Stallings
  - *Data and Computer Communications*; Fifth Edition
- Preston Gralla
  - How the Internet Works, Pearson Education, Inc., 2002

5. Grading

- Midterm1: 20 points

- Midterm2: 20 points

- Tutorial/Homework / Quizzes : 20 points

- Final exam: 40 points

6. Quizzes and Exams

- If it is not covered in a class, it will not be tested on quizzes and exams.

- If there is an exception, it will be announced in a class.

- In quizzes and exams, explain how you arrive at your answer.

7. Policy on Missed Exams and Quizzes

- Absolutely no make up quizzes will be given for missed quizzes.

- For the midterms and final exam, you must have a pressing reason (such as a conflicting exam in another course) to miss a scheduled midterm or final exam. If you miss an exam due to unforeseen emergency, you may take a make-up exam only after providing written documentation of an excuse that is acceptable to the department.

8. How to get a nice grade in CEN 444

- Before class
  - Read lecture notes, and find what you don't understand.
- During class
  - Find answers to your questions.
  - Find what is important.
- After class
  - Read lecture notes again.
  - We strongly suggest that you read suggested readings.

9. Needed Help

I am here to HELP you.
Come to see me in my office hours,
and ask questions !!!

Course outlines (1)

Chapter 1

- Intro. To computer networks
  - Communication systems (centralized, distributed)
  - Computer networks: definition
  - Comp. net objectives
  - Comp. net features
  - Network components
  - Classification of comp. networks
  - Protocols
  - Internet technology
  - Readings: Tanenbaum introduction, sections 1.1-1.4

Chapter 2

- Computer networks and reference models
  - Definition
  - Principles of computer networks
  - Network architecture models
  - Standardization & OSI model
  - Protocol hierarchies
  - Internet & TCP/IP
    - Readings: Tanenbaum chapter 1 and sections 2.2, 2.4

Course outlines (2)

Chapter 3   ▪ Data link layer

- Data link sub-layers
- Framing
- Error detection and correction
- Flow control
  - Readings: Tanenbaum sections 3.1-3.4
- Medium Access Control: MAC sub-layer
- ALOHA, CSMA
  - Readings: Tanenbaum sections 4.1, 4.2.1-4.2.6
- HDLC, PPP & SLIP

Chapter 4   ▪ Ethernet Network

Topology

MAC layer

Data encapsulation

CSMA/CD

Backoff algorithm

– Readings: Tanenbaum section 4.3.1

Course outlines 3

- **Chapter 5 :** Token ring network
  - Features
  - Interface modes
  - Token passing protocol
  - Frame & token format
  - Priority in token ring
  - Readings: Tanenbaum section 4.3.3
- **Chapter 6 :** Hubs & Switches