King Fahd University of Petroleum and Minerals
College of Computer Sciences and Engineering
Department of Computer Engineering

COE 540 Computer Networks (3-0-3)

Instructor: Dr. Marwan Abu-Amara
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Term: 082 (2nd term 2008–2009)
Day & Time: UT 06:30 PM – 07:45 PM
Location: 22-132
Textbooks:

1. *Data Networks*, Dimitri Bertsekas and Robert Gallager, Prentice Hall, 2nd Edition, 1992.
2. *Computer Networking: A Top-Down Approach Featuring the Internet*, J. Kurose & K. Ross, Addison Wesley, 3rd Edition, 2005.

References:

1. *Computer Networks*, Andrew Tanenbaum, Prentice Hall, 4th Edition, 2003.
2. *Communication Networks*, L. Garcia and I. Widjajm, 2nd Edition, 2006.
3. *Probability and Random Processes for Electrical Engineering*, L. Garcia, Addison Wisely, 2nd Edition.

Office Hours: UT 10:00 AM – 11:00 AM and 05:00 PM – 06:00 PM (excluding prayer times) or by appointment
Web Site: http://faculty.kfupm.edu.sa/COE/marwan
Catalog Description:

    Computer Networking concepts. Basic Terminology; Protocols; Communication Architectures; OSI Reference Model, Protocol suites. Data Link Layer; ARQ Strategies; Analysis of ARQ Strategies. Multi-access communication. Introduction to ATM Delay Models in Data Networks; Introduction to performance analysis; Little's Theorem; Single queue models; Network of queues. Network layer. Routing in Data Networks. Flow and Congestion Control. Transport layer. Application Layer.

Tentative Grading Policy:

- Quizzes/Homeworks   **25%** (Each quiz/homework may carry a different weight)
- Project*   **25%**
- Major Exam   **20%** (Week 10 or Week 11)
- Final Exam   **30%** (***Comprehensive***)

A separate handout will be distributed describing the offered projects and the respective deadlines

IMPORTANT NOTES:

- All KFUPM regulations and standards will be enforced. Attendance will be checked each class. The KFUPM rule pertaining to a DN grade will be strictly enforced (i.e. **> 6 absences** will result in a DN grade). *Check your university e-mail regularly for warnings regarding your absences.*
- If you are late to the class for <u>more than 10 minutes</u> (i.e. arrive after 06:40 PM), you will **NOT be allowed to enter** the classroom and you will be considered absent for that class.
- Only university approved/certified excuses will be accepted, and should be presented **no later than 1 week** after absence.
- Homeworks are to be submitted **in class** on the due date during the class period. Late homeworks will **NOT be accepted** (i.e. will get 0 credit).
- You have 48 hours to object to the grade of a homework, a quiz, or a major exam from the end of the class time in which the graded papers have been distributed back. If for some reason you cannot contact me within this period, send me an email requesting an appointment. The email should be sent within the 48-hour time period.
- **NO make up exams**. ALL homeworks and quizzes will be counted towards your grade.
- Final exam is **<u>comprehensive</u>**.

<p style="text-align: center;">**TENTATIVE Weekly Course Schedule**</p>

Week	Topic	Textbook Section[**]
1	Introduction and Layered Network Architecture	**Chapter 1 (Gallager)**
2	Physical Layer (channels and Modems), Error Detection	**Sections 2.1, 2.2 & 2.3 (Gallager)**
3	ARQ Strategies, Framing, Standard DLCs Sections 2.8, 2.9 and 2.10 are designated as Reading Assignment	**Sections 2.4, 2.5, & 2.6 (Gallager)**
4	Review of Probability, Statistics and Basics of Markov Processes	**Chapter 3 (Garcia) – preferably 4 and 5 too.**
5	Review of Probability, Statistics and Basics of Markov Processes Introduction to Delay Models (Little's Formula, M/M/1 Model)	**Chapter 3 & 9 (Garcia) – preferably 4 and 5 too.**
6	Introduction to Delay Models (M/M/c and derivative Models, basic M/G/1 formulas, Burke's Theorem, Jackson's Theorem)	**Chapter 3 (Gallager) & Chapter 9 (Garcia)**
7	Multiaccess Communication (Aloha, Tree Algorithms, CSMA, Reservation, FDMA/TDMA, CDMA, etc.)	**Sections 4.1, 4.2 & 4.3 (Gallager) + notes**
8	Multiaccess Communication (Aloha, Tree Algorithms, CSMA, Reservation, FDMA/TDMA, CDMA, etc.)	**Sections 4.1, 4.2 & 4.3 (Gallager) + notes**
Midterm Break (April 25th, 2009 – April 29th, 2009)		
9	Application Layer (Principles, Web/HTTP, FTP, Email, DNS)	**Sections 2.1, 2.2, 2.3, 2.4, 2.5 (Kurose)**
Major Exam (Week 10 – Week 11)		
10	Transport Layer (Multixplexing, Demultiplexing, Connectionless (UDP)/ Connection-Oriented (TCP) protocols)	**Sections 3.1, 3.2, 3.3 and 3.5 (Kurose)**
11	Transport Layer (Congestion Control, TCP Congestion Control)	**Sections 3.6, 3.7, & 3.8 (Kurose)**
12	Network Layer (Routing Principles, Hierarchical Routings, Internet Protocol)	**Sections 4.1, 4.2, 4.3 & 4.4 (Kurose)**
13	Network Layer (Routing in the Internet, Router Operation, IPv6, etc.)	**Sections 4.5, 4.6, 4.7, 4.8, … (Kurose)**
14	Presentation of Projects	
15	Presentation of Projects	
Final Exam (Comprehensive – Scheduled by Registrar)		

[**] *Students will be responsible for material covered in class or material that is designated as part of the self-learning component of the course.*