

KING FAHD UNIVERSITY OF PETROLEUM & MINERALS

COMPUTER ENGINEERING DEPARTMENT

COE 344: Computer Networks (3-3-4) Term 102 (Spring 2010)

Syllabus

Instructor: Dr. Abdulaziz Barnawi

Lecture: S.M.W.: 11:00-11:50 AM

Class location: Bldg 24 Room 151

Office hours: S.M.: 10:00-10:50 AM, T.: 11:00-11:50AM or by appointment

Office location: Bldg 22 Room 407-4 **Office-Tel:** 1038

Web site: <http://faculty.kfupm.edu.sa/coe/barnawi>

Course related e-mail: Blackborad email is the main email used during the course

Course Description:

This course will be taught using TCP/IP top-down approach. Topics covered include introduction to computer networks. Application layer design issues and protocols are discussed. Then, Transport layer design issues, protocols as well as congestion control mechanisms are presented. Socket programming is explained. An in-depth analysis is presented of the Network layer design issues, and internetworking. MAC layer design issues and protocols are presented. Finally, multimedia network applications are explored.

Prerequisite: COE 341 - Data and Computer Communications.

Textbook:

Computer Networking: A Top-Down Approach Featuring the Internet, J. Kurose & K. Ross, Addison Wesley, 4th Edition, 2008.

Tentative Grading Policy:

Homework Assignment	10%	
Quizzes	10%	
Lab	15%	
Major Exam I	15%	(Wednesday 16 March)
Major Exam II	20%	(Saturday 7 May)
Final Exam	30%	
Bonus: online discussions	5%	

Important Policies:

- 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).
- Prompt attendance in classes shows how keen you are to benefit from this course and enhances your performance and grade. Therefore, three late attendances (5 min max) are counted as one absent.
- Only university approved/certified excuses will be accepted, and should be presented **no later than 1 week** after absence.
- Assignments are submitted **at the beginning of the class** of the due date.
- Quizzes are carried out **at the beginning of class time**.
- 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.
- *Check your exam schedule carefully.* **NO makeup exams** are allowed.
- Check the course webpage and Blackboard for updates, emails and announcements.
- Plagiarism (copying and handing in for credit someone else's work) is a serious instructional offense that will not be tolerated.

Tentative Class and Lab Schedule

Week	Chapter	Topics	Lab
1	Introduction (Chapter 1)	<ul style="list-style-type: none"> • What is the Internet, What is a protocol? • Network Edge, Network Access & Physical Media • Network Core, Packet-Switched Networks, Internet Backbones, and ISPs • Delay and Loss in Packet-Switched Networks • Protocol Layers and Their Service Models • Brief History of Computer Networking and the Internet 	<u>Introduction</u> : Lab setting, Network devices, etc.
2	Application Layer (Chapter 2)	<ul style="list-style-type: none"> • Principles of Network Applications • The World Wide Web: HTTP • File Transfer: FTP 	<u>Lab1</u> : Networking Tools - OS and LAN implementation
3		<ul style="list-style-type: none"> • Electronic Mail in the Internet • The Internet's Directory Service: DNS 	<u>Lab2</u> : Application Layer - HTTP, FTP, and TFTP Services
4		<ul style="list-style-type: none"> • P2P File Sharing 	<u>Lab3</u> : Application Layer - DNS, SMTP, and POP3
5	Transport Layer (Chapter 3)	<ul style="list-style-type: none"> • Transport-Layer Services and Principles • Multiplexing and Demultiplexing Applications 	<u>Lab4</u> : Socket Programming
6		Major Exam I – Wednesday 16 March	
7		Principles of Congestion Control	<u>Lab5</u> : Review
8	Network Layer (Chapter 4)	<ul style="list-style-type: none"> • Introduction and Network Service Models • What is Inside a Router? • IP: the Internet Protocol 	<u>Lab6</u> : Transport Protocol Analysis – TCP & UDP
Mid-Term Vacation 9-13 April			
9		<ul style="list-style-type: none"> • Routing Algorithms • Hierarchical Routing • Routing in the Internet 	<u>Lab7</u> : IPv4 & IPv6 Addressing
10	Link Layer & LANs (Chapter 5)	<ul style="list-style-type: none"> • Link Layer: Introduction & Services • Multiple Access Protocols and LANs 	<u>Lab8</u> : Network Protocol Analysis - IP
11		<ul style="list-style-type: none"> • LAN Addresses and ARP • Ethernet • Hubs, Bridges and Switches 	<u>Lab9</u> : Dynamic Routing Protocols: RIPv1, and RIPv2
12		<ul style="list-style-type: none"> • PPP: the Point-to-Point Protocol • Link Virtualization: ATM 	<u>Lab10</u> : Routing Between LANs using OSPF, and ICMP
		Major Exam II – Saturday 7 May	
13	Wireless & Mobile Networks (Chapter 6)	<ul style="list-style-type: none"> • Wireless Links, Network Characteristics and CDMA 	<u>Lab11</u> : IEEE 802.3, ARP
14		<ul style="list-style-type: none"> • Wireless LANs: IEEE 802.11 WPAN & Bluetooth 	<u>Lab12</u> : Trunking, Virtual LAN (VLAN), and L3 Routing
15		<ul style="list-style-type: none"> • Mobile networking (introduction) 	<u>Lab13</u> : DHCP, NAT, and Access List
			Final Lab Exam