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

Department of Computer Engineering

COE 344 Computer Networks (3-3-4)

Instructor: Dr. Marwan Abu-Amara
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Term: 082 (2nd term 2008–2009)
Day & Time: UT 08:30 AM – 09:45 AM
Location: 24-133
Prerequisite: COE 341 (Data and Computer Communications)
Textbook: *Computer Networking: A Top-Down Approach Featuring the Internet*, J. Kurose & K. Ross, Addison Wesley, 3rd Edition, 2005.
Office Hours: UT 10:00 AM – 11:00 AM and 05:00 PM – 06:00 PM (excluding prayer times) or by appointment
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Tentative Grading Policy:

- Homeworks **10%**
- Quizzes **10%**
- Lab **15%**
- Major Exam I ..... **15%** (Sunday April 05, 2009 during class period)
- Major Exam II ..... **20%** (Tuesday May 19, 2009 during class period)
- Final Exam ..... **30%** (*Comprehensive*)

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 more than 5 minutes (i.e. arrive after 08:35 AM), 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.
- Homeworks are to be submitted **in class** on the due date during the class period. Late homeworks will **NOT be accepted**.
- 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 **comprehensive**.

Tentative schedule

Week		Topic	Lab Experiments
1	Introduction (Chapter 1)	What is the Internet, What is a protocol? Network Edge, Network Core, and Network Access & Physical Media Delay and Loss in Packet-Switched Networks Protocol Layers and Their Service Models Internet Backbones, NAPs and ISPs Brief History of Computer Networking and the Internet	Introduction: Lab setting, Network devices, etc.
2	Application Layer (Chapter 2)	Principles of Application Layer Protocols The World Wide Web: HTTP File Transfer: FTP	Lab1: Networking Tools - OS and LAN implementation
3		Electronic Mail in the Internet The Internet's Directory Service: DNS	Lab2: Application Layer - Web, FTP, and TFTP Services
4		P2P File Sharing	Lab3: Application Layer - DNS, SMTP, and POP3
5	Transport Layer (Chapter 3)	Transport-Layer Services and Principles Multiplexing and Demultiplexing Applications	Lab4: Review
6		Connectionless Transport: UDP Principles of Reliable of Data Transfer: TCP case study Principles of Congestion Control **Major Exam I (Monday April 5th, 2009)**	Lab5: Socket Programming
7		Principles of Congestion Control	Lab6: Transport Protocol Analysis – TCP & UDP
8	Network Layer (Chapter 4)	Introduction and Network Service Models What is Inside a Router? IP: the Internet Protocol	Lab7: Network Protocol Analysis - IP
		Midterm Break (April 25th, 2009 – April 29th, 2009)	
9	Network Layer (Chapter 4)	Routing Algorithms Hierarchical Routing Routing in the Internet	Lab8: IPv4 Address
10	Link Layer & LANs (Chapter 5)	Link Layer: Introduction & Services Multiple Access Protocols and LANs	Lab9: Dynamic Routing Protocols: RIP, and RIPv2
11		LAN Addresses and ARP Ethernet Hubs, Bridges and Switches **Major Exam II (Tuesday May 19th, 2009)**	Lab10: Routing Between LANs using OSPF
12		PPP: the Point-to-Point Protocol Link Virtualization: ATM	Lab11: DHCP
13	Wireless & Mobile Net (Chapter 6)	Wireless Links & Network Characteristics, CDMA Wireless LANs: IEEE 802.11 WPAN & Bluetooth Mobile networking (introduction)	Lab12: Network Protocol Analysis - IEEE 802.3, ARP, and ICMP
14	Multimedia Networking (Chapter 7)	Multimedia Networking Applications Streaming Stored Audio and Video	Lab13: Virtual LAN (VLAN)
15		Making the Best of the Best-Effort Service: An Internet Phone Example Protocols for Real-Time Interactive applications	**Final Lab Exam**

* Week 1 begins on ***February 28, 2009***

Course Learning Outcomes

Course Learning Outcomes	Outcome Indicators and Details	Assessment Methods and Metrics	Min. Weight	ABET 2000 Criteria
1. Ability to apply knowledge of mathematics, probability, and statistics to model and analyze some networking protocols.	• Packet and circuit switching modeling, analysis, and comparison. • Modeling of some MAC protocols.	• Assignments • Quizzes • Exams	**18%**	A (M)
2. Ability to design, implement, and analyze simple computer networks.	• Experiments on LAN design and implementation. • Protocol analysis. • Use of networking tools.	• Lab assignments • Lab work	**6%**	B (L)
3. Ability to identify, formulate, and solve network engineering problems.	• Identify and solve reliable data transfer problems over IP Networks. • Identify and solve network addressing problems. • Identify, compare, and contrast different routing protocols.	• Assignments • Quizzes • Exams • Lab work	**35%**	E (H)
4. Knowledge of contemporary issues in computer networks.	• Contemporary networking technologies.	• Assignments	**5%**	J (L)
5. Ability to use techniques, skills, and modern networking tools necessary for engineering practice.	• Setup networking services. • Setup and basic configuration of networking devices. • Networking tools. • Traffic analyzers. • Troubleshooting network problems. • Different operating systems.	• Lab work	**9%**	K (L)