

**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  
**Office:** 22-145  
**Phone:** 1632  
**E-mail:** [marwan@kfupm.edu.sa](mailto:marwan@kfupm.edu.sa)  
**Term:** 121 (1<sup>st</sup> term 2012–2013)  
**Day & Time:** SM 11:00 AM – 12:15 PM  
**Location:** 59-1017  
**Prerequisite:** COE 341 (Data and Computer Communications)  
**Textbook:** *Computer Networking: A Top-Down Approach Featuring the Internet*, J. Kurose & K. Ross, Addison Wesley, 5<sup>th</sup> Edition, 2009.  
**Office Hours:** SMW 09:00 AM – 10:00 AM or by appointment  
**Web Site:** <http://faculty.kfupm.edu.sa/COE/marwan>

**Tentative Grading Policy:**

- Homeworks ..... **10%**
- Quizzes..... **10%**
- Lab ..... **15%**
- Major Exam I ..... **15%** (Week 06 – Monday October 08, 2012 during class period)
- Major Exam II..... **20%** (Week 12 – Monday December 03, 2012 during class period)
- Final Exam..... **30%** (Comprehensive – Tuesday January 01, 2013, 7:00 PM)

**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 10 minutes (i.e. arrive after 11:10 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.
- Use of cell phones and PDAs during class period and during exams is absolutely **prohibited**.
- 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	<u>Introduction</u> : Lab setting, Network devices, etc.
2	Application Layer (Chapter 2)	<u>Lab1</u> : Networking Tools - OS and LAN implementation
3		<u>Lab2</u> : Application Layer - HTTP, FTP, and TFTP Services
4		<u>Lab3</u> : Application Layer - DNS, SMTP, and POP3
5	Transport Layer (Chapter 3)	<u>Lab4</u> : Socket Programming
6		<u>Lab5</u> : Review
7		<u>Lab6</u> : Transport Protocol Analysis – TCP & UDP
<b>Id al-Adha Vacation (October 20<sup>th</sup>, 2012 – October 31<sup>st</sup>, 2012)</b>		
8	Network Layer (Chapter 4) Introduction and Network Service Models What is Inside a Router? IP: the Internet Protocol	<u>Lab7</u> : IPv4 & IPv6 Addressing
9	Network Layer (Chapter 4) Routing Algorithms Hierarchical Routing Routing in the Internet	<u>Lab8</u> : Network Protocol Analysis - IP
10	Link Layer & LANs (Chapter 5)	<u>Lab9</u> : Dynamic Routing Protocols: RIPv1, and RIPv2
11		<u>Lab10</u> : Routing Between LANs using OSPF, and ICMP
12		<u>Lab11</u> : IEEE 802.3, ARP
13	Wireless & Mobile Net (Chapter 6) Wireless Links & Network Characteristics, CDMA Wireless LANs: IEEE 802.11 WPAN & Bluetooth Mobile networking (introduction)	<u>Lab12</u> : Trunking, Virtual LAN (VLAN), and L3 Routing
14	Multimedia Networking (Chapter 7)	<u>Lab13</u> : DHCP, NAT, and Access List
15		<b>Final Lab Exam</b>

\* Week 1 begins on *September 25, 2010*

## 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.	<ul style="list-style-type: none"> <li>• Packet and circuit switching modeling, analysis, and comparison.</li> <li>• Modeling of some MAC protocols.</li> </ul>	<ul style="list-style-type: none"> <li>• Assignments</li> <li>• Quizzes</li> <li>• Exams</li> </ul>	<b>18%</b>	A (M)
2. Ability to design, implement, and analyze simple computer networks.	<ul style="list-style-type: none"> <li>• Experiments on LAN design and implementation.</li> <li>• Protocol analysis.</li> <li>• Use of networking tools.</li> </ul>	<ul style="list-style-type: none"> <li>• Lab assignments</li> <li>• Lab work</li> </ul>	<b>6%</b>	B (L)
3. Ability to identify, formulate, and solve network engineering problems.	<ul style="list-style-type: none"> <li>• Identify and solve reliable data transfer problems over IP Networks.</li> <li>• Identify and solve network addressing problems.</li> <li>• Identify, compare, and contrast different routing protocols.</li> </ul>	<ul style="list-style-type: none"> <li>• Assignments</li> <li>• Quizzes</li> <li>• Exams</li> <li>• Lab work</li> </ul>	<b>35%</b>	E (H)
4. Knowledge of contemporary issues in computer networks.	<ul style="list-style-type: none"> <li>• Contemporary networking technologies.</li> </ul>	<ul style="list-style-type: none"> <li>• Assignments</li> </ul>	<b>5%</b>	J (L)
5. Ability to use techniques, skills, and modern networking tools necessary for engineering practice.	<ul style="list-style-type: none"> <li>• Setup networking services.</li> <li>• Setup and basic configuration of networking devices.</li> <li>• Networking tools.</li> <li>• Traffic analyzers.</li> <li>• Troubleshooting network problems.</li> <li>• Different operating systems.</li> </ul>	<ul style="list-style-type: none"> <li>• Lab work</li> </ul>	<b>9%</b>	K (L)