King Saud University

College of Computer and Information Sciences

Department of Computer Engineering

1. Course number and name: **CEN441, Computer Networks**

2. Credits and contact hours: **4 (3, 2, 1)**

3. Instructor's or course coordinator's name: Aasem Alyahya

4. Text book, title, author, and year:

Computer Networks: A Systems Approach fifth edition, Bruce S. Davie and Larry L. Peterson, (Morgan Kaufmann).

a. other supplemental materials:

Computer Networks, A. Tanenbaum, Pearson. Computer Networking: A Top-Down Approach, J. Kurose and K. Ross, Pearson.

5. Specific course information

a. Course description (catalog)

Introduction to computer networks; Network architecture with respect to OSI and TCP/IP reference models; Ethernet, 802.11 technologies, Bluetooth, and cellular systems; Frame Switching and VLANs; Bridges and spanning trees; Basic network protocols: IPv4, ARP, DHCP, ICMP. Interior routing protocols. Transport layer protocols: UDP, TCP, and RTP.

b. prerequisites or co-requisites: CEN341 (prerequisite).

c. Required, elective, or selected elective course: Required.

6. Specific goals for the course

a. Course Learning Outcomes: This course requires the student to demonstrate the following

1. Identify the essential network terminologies, devices, architecture and performance metrics.
2. Describe the Ethernet LAN protocol and the major wireless systems standers.
3. Compare between virtual circuits and datagram networks.

4. Apply and evaluate IP and addressing structure.
5. Apply and analyze the transport layer protocols TCP, UDP.
6. Demonstrate VLAN and spanning trees.
7. Apply and conduct routing algorithms and packet forwarding protocols.

7. Brief list of topics to be covered and schedule in weeks

Topic	Weeks
Introduction to Computer Networks, network architecture and performance calculations.	8
Ethernet: physical properties and MAC protocols.	4
Wireless networks: IEEE 802.11 (WiFi), Bluetooth and Cellular systems.	4
Frame switching and VLANs.	16
Bridges and spanning trees algorithm.	10
Basic Internetworking, with an introduction to layer 3, IP addressing, forwarding, fragmentation and the essential IP supporting protocols (ARP, DHCP, ICMP).	14
Routing Protocols: distance vector algorithm (RIP), and link state algorithm (OSPF).	12
Transport Layer Protocols: Datagram protocols (UDP), reliable byte stream (TCP) and protocols for real time applications (RTP)	8
Review and Evaluation.	4

8. Assessment Plan for the Course

Homework/ Project	5%	
Lab	20%	
Quizzes	5%	
Midterm 1	15%	7th week
Midterm 2	15%	12th week
Final exam	40%	

9. Tentative out of class assignments and dates

- Lecture notes will be posted in LMS page.
- Homework assignments / lab reports must be done individually and submitted no later than the specified date.
- A set of 7 quizzes have to be achieved within the semester.

10. Current Instructor, Department, office hours and date:

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Department of Computer Engineering
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