بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ

Network Lab (CEN447)

Dr. Ashraf Abdelaziz Taha

Email: aataha@ksu.edu.sa

http://fac.ksu.edu.sa/aataha/home/

Course Description

- Introduction to Networks
- OSI & TCP/IP Models
- Fundamentals of LAN and WAN
- IP Addressing and Subnets
- Variable Length Subnet Mask (VLSM)
- Routing Protocols (RIP, OSPF and EIGRP)
- Virtual Local Area Networks (VLANs)
- Spanning Tree Protocol (STP)
- Access Control List (ACL)

Course Objectives

Covering the following topics:

- OSI and TCP/IP models
- LAN
- WAN
- IP Addressing
- Routing Protocols
- Switching

Course Outcomes

At the end of the course the student will be able to Describe the fundamental aspects of OSI & TCP/IP models

- **Design small to medium size networks**
- **Troubleshoot the networks using theoretical and practical hands on knowledge**
- **Handle small to medium size networks practically covering all the fundamental network concepts of:**
- **IP Addressing,**
- **VLSM,**
- **Routing Protocols,**
- **VLANS,**
- **Spanning tree protocols, ... etc.**

Experiments

1) Introduction about networks and introduction about basic networking devices such as routers, switches, hubs

2) Designing the network, IP addressing and Subnets, designing using Variable Length Subnet Mask

3) Basic Router and Switch configuration. Configuring a small network and securing Cisco devices along with learning remote access to Cisco devices

4) Creating Virtual LANs and performing inter-VLAN routing

5) Configuring VLAN trunking and Spanning Tree Protocol (STP)

6) Configuring and troubleshooting Routing Information Protocol (RIP)

7) Configuring and troubleshooting Open Shortest Path First (OSPF) routing protocol

8) Configuring and troubleshooting Extended Interior Gateway Routing Protocol (EIGRP)

9) Implementing Standard and Extended Access Control List (ACL) in Cisco Routers

Reference Books

Recommended Text Book:

1) CCNA Command Quick Reference by Scott Epson

Additional Materials:

1) Lecture slides being provided in the class

2) James F. Kurose and Keith W. Ross (2008): “Computer Networking: A Top-Down Approach”, 4th Edition, Addison-Wesley/Pearson, 2008.

3) A. S. Tanenbaum :“Computer Networks”, 4rd Ed., Prentice-Hall, '03.

Grading

Midterm1	: 15 points
Midterm2	: 15 points
Project	:10 points
Experiments	: 20 points
Homework	: 10 points
Final exam	: 30 points
Total	: 100 Points

Midterm Time Table

Midterm1:

1/3/2015 3/3/2015

Midterm2:

26/4/2015 28/4/2015

Final Exam

10/5/2015 12/5/2015