CSCI 534 Networking II - Routers and Switches FALL 2014

Instructor: Dr. Saffer sam.saffer@tamuc.edu
Office: JOUR 235 Office Hours: M 9:00 AM – 11:00 AM 3:30 PM - 6:30 PM
W 9:00 AM – 11:00 AM 3:30 PM - 6:30 PM
MW Also available by appointment
TR by appointment
Communication by email is welcome any time, evenings, and weekends.

Textbook: Materials for the major topics for this course are presented in Class Notes, which will be provided to students free of charge.
Supplemental reading: On reserve in the Library
Data Communications, Computer Networks, and Open Systems. Fred Halsall. Addison-Wesley, Menlo Park, Calif.
Cisco Certified Network Associate Study Guide 4th Ed. by Todd Lammie. Sybex

This course is a continuation of CSCI 525 (Networking I, Local Area Networks). This course is designed to instruct students in the detailed operation of the Cisco 2500 series router and the 1900 series data switch. Students will learn how to program and configure network routers and data switches. Laboratory exercises will be provided. Also, such common network security techniques as Virtual Local Area Networks (VLANs) and Access Control Lists will be presented along with other network security topics. Students will have the opportunity to work with equipment in the laboratory as they learn to design and configure network devices in the implementation lab exercises. . During this class, the student will receive over 45 contact hours, which is the usual number of contact hours for a 3 semester hour course. While a portion of these contact hours will be in the form of lecture, the course is designed to be a laboratory course with about 45% of these contact hours in the form of individualized instruction in the Router/Switch lab. Looking at the schedule below, students may have 2 hours of lecture one week and 4 hours of lab the next week. It is therefore important to keep up with the current schedule and to know when and where you need to be.

LABS: The formal class schedule is W 12:30 PM - 3:10 PM. However, Labs will be scheduled in 4-5 hour blocks at various times in the weeks when there is no lecture. There will be approximately 3-5 lab sections with 6-10 students each. Multiple lab sections are provided to so students can easily fit a lab into their schedule. The student may sign up for any lab that meets his or her schedule. However, the students cannot transfer from one lab to another. Once a student signs up for a lab, this will be their permanent lab time for the entire semester. There will be no more than 8 students per lab. The approximate schedule for lecture and labs are listed below. However, this will be adjusted as the semester progresses. Although a handout of the lecture notes will be given out at the beginning of the semester, the course will basically follow the text book.

Grade Determination:
Test #1 20%
Test #2 20%
Test #3 20%
Lab Grade 10%
Final Exam 30%

Extra Points from Pop quizzes may be added to the Test scores. To enhance the importance of the Final Exam, and to encourage improvement in performance over the semester, 10 points will be added to a Final Exam score of 77

or better. Five (5) points will be deducted from the student's final average for each unexcused absence from lecture. Five (5) points will be deducted from the student's final average for each unexcused absence from the lab. If any student has 3 or more unexcused absences they may be dropped from the class. The claim of illness must be accompanied with a Doctor's written note and will be reviewed by the Assistant Dean. (See Student Handbook).

Student Learning Outcomes:
1) Students will demonstrate the ability to design and configure a router network.
2) Students will demonstrate the ability to design and configure a switched network and VLANs.
3) Students will demonstrate the ability to utilize Access Control List in configuring a router for ACLs.
4) Students will demonstrate knowledge of the basic concepts of Wide Area Networks and WAN components, and integrate the knowledge of subnets, routers, switches, VLANs, ACLs and WANs, into an understanding of modern digital computer networks.
5) Students will gain practical laboratory experience working with routers and switches in a modern network.

WEEK 1 **August 27 Lecture:**
Class Lecture and Lab Organization
Review subnetting; Ch.3 Classful/Classless IP subnetting; CIDR; VLSM
Review IEEE 802.3 and IEEE 802.5 and how Routers and Switches enhanced Ethernet
Review this chapter on your own Ch.2 Read P 56-77; TCP, UDP, port numbers, IP,ICMP,ARP,RARP

WEEK 2 **September 3**
Routing protocols, routed protocols, Distance-vector protocols, Link -State Protocols.
Configuring the Cisco Router
Cabling considerations

WEEK 3 **of September 8 LAB:**
LAB #1: Making Cables, Configuration of the Cisco Series 2500 Router

WEEK 4 **of September 15 LAB:**
LAB #2 More of Router Configuration
LAB TEST: Router Configuration

WEEK 5 **September 24 Lecture:**
EXAM #1 - Routing Protocols; Router Configuration

WEEK 6 **October 1 Lecture:**
Ch. 7 Communications Switches
Spanning Tree Protocols and associated terms; Configuring a switch
Switch types: Cut-through, Fragment Free, Store and Forward;

WEEK 7 **October 8 Lecture:**
Review Configuration of the CISCO 1900 Series Switch Virtual Local Area Networks (VLANs)

WEEK 8 **of October 13 LAB:**
LAB#3: Configuration of Switches;
Configuration of VLANs

WEEK 9 **October 22 Lecture:**
EXAM #2 - Switches, VLANs

WEEK 10 **October 29 Lecture:**
Standard and Extended Access Control Lists ACLs

WEEK 11 **of November 5 LAB:**
LAB#4: ACL's

WEEK 12 **of November 10 Lecture:**
EXAM#3 ACLs

WEEK 13 **November 19 Lecture:**
Wide Area Networks (WANs)
Course Review

WEEK 14 **of November 26 Thanksgiving Holiday**

WEEK 15 **of December 3 Lab:**
LAB#5: **Semester Project LAB** (Review of lab work)

WEEK 16 **December 10 Final EXAM**

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment." (See Student's Guide Handbook, Policies and Procedures, Conduct).

Students requesting accommodations for disabilities must go through the Academic Support Committee. For more information, please contact the Director of Disability Resources & Services, Halladay Student Services Bldg., Room 303D, (903) 886-5835

Students with Disabilities:

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services
Texas A&M University-Commerce
Halladay Student Services Building
Room 303 A/D
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
StudentDisabilityServices@tamuc.edu