CSCI 444 Networking II - Routers and Switches  FALL  2015

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.

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.

This course is a continuation of CSCI 434 (Networking I, Local Area Networks). This course is designed to give students a historical perspective on current LAN technology, and experience is setting up a router and switch network. Laboratory exercises will be provided. 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. 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.
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 combined in any lecture or lab, they will be dropped from the class. In order for an illness to be excused, the claim of illness must be accompanied with a Doctor's written explanation and will be reviewed by the Assistant Dean. (Please see Student Handbook).

Student Learning Outcomes: Students will achieve
1) Students will achieve a historical perspective on the current LAN technology.
2) Students will achieve an understanding of how router switch networks are designed and assigned subnets.
3) Students will achieve skills in configuring a router.
4) Students will achieve skills in configuring a switch.
5) Students will achieve an understanding of Virtual Local Area Networks.
6) Students will achieve an understanding and use of Access Control Lists.
7) Students will achieve an understanding of the basic concepts of Wide Area Networks and WAN components.
8) Students will be able to integrate the knowledge of subnets, routers, switches, VLANs, ACLs and WANs, into the implementation of a digital computer network.
9) Students will gain practical laboratory experience working with routers and switches in a modern network.

WEEK 1 January 21 Lecture:
History of Ethernet; Comparison of IEEE 802.3 and IEEE 802.5
Introduction to Classful/Classless IP subnetting; CIDR; VLSM
Review IEEE 802.3 and IEEE 802.5 and how Routers and Switches enhanced Ethernet

WEEK 2 January 28
Configuring the Cisco Router
Routing protocols, routed protocols, Distance-vector protocols, Link-State Protocols.
Cross-over and Straight through cables

WEEK 3 February 2 Lecture:
LAB #1: Making Cables, Configuration of the Cisco Series 2500 Router

WEEK 4 February 9 LAB:
LAB #2 More of Router Configuration
LAB TEST: Router Configuration

WEEK 5 February 18 Lecture:
EXAM #1 - Routing Protocols; Router Configuration

WEEK 6 February 25 Lecture:
Introduction to communications switches.
How to configure a switch; Spanning Tree Protocols and associated terms;

WEEK 7 March 4 Lecture:
Virtual Local Area Networks (VLANs)

WEEK 8 March 9 Lecture:
LAB#3: Exercises - Configuration of Switches; Configuration of VLANs

WEEK 9 March 18 Spring Break:

WEEK 10 March 25 Lecture:
EXAM #2 - Switches, VLANs
WEEK 11 April 1 Lecture:  
Access Control Lists - ACLs

WEEK 12 of April 6 LAB:  
LAB#4: Exercises - ACL's

WEEK 13 April 15 Lecture:  
EXAM#3 ACLs

WEEK 14 April 22 Lecture:  
Wide Area Networks (WANs)

WEEK 15 April 27 Free Lab  
(Review of lab work) Semester Project (optional)

WEEK 16 May 6  
Course Review and Free Lab

WEEK 17 May 13  
Final EXAM

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

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 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