CSCI 525 LOCAL AREA NETWORKS Syllabus FALL 2015

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Office: JOUR 235   Office Hours: M 10:00 AM – 11:00 AM   12:30 PM - 2:00 PM 4:30 PM - 6:00 PM
                                                W 10:00 AM – 11:00 AM   12:30 PM - 2:00 PM 4:30 PM - 6:00 PM
                                                MW Also available by appointment
                                                TR by appointment
                                                Communication by email is welcome at any time, evenings, and weekends.

Course Description: This course covers the basic principles and operations of Local Area Networks (LAN's). Such topics include basic data communications, the OSI model, protocols and topologies. Students will have the opportunity to gain "class room" experience with the installation, administration, and operating characteristics of such networking systems as Netware 3.12, Windows 2008, Linux. Those wishing to take the various networking certification exams will find this course helpful. 3 semester hours. Prerequisites: Experience with Computer Programming or Permission of instructor. Graduate co-requisites: CSCI 515

Textbook:
Materials for the major topics for this course are presented in Class Notes, which will be provided to students free of charge.

Non-Required books for further reading: (on reserve in Library)
Networks for Computer Scientists and Engineers. Zheng. Oxford Press.

Cisco Networking Academy Program: First-Year Companion. Cisco Systems Press. 2nd ed.
Cisco Networking Academy Program: Second-Year Companion. Cisco Systems Press. 2nd ed.
Networking Essentials. 2nd. Ed. James Chellis. Sybex Network Press. ISBN 0-7821-2220-5
NT Server 4 2nd. Ed. Matthew Strebe.Sybex Network Press.ISBN 0-7821-2222-1

OTHER REFERENCES: These books are not required. They are referenced in the class notes and some of them are on RESERVE in the TAMU-Commerce Library.

CNE Training Guide: Networking Technologies, 3rd. Ed. Debra Niedermiller-Chaffins, New Rider Publishing, Indianapolis, Indiana, 1994. May be ordered direct by calling 1-800-428-5331.
ISBN 1562-05-3639.

Novell's CNE Study Guide David Clarke, Novell Press. SYBEX Inc.
May be ordered direct by calling 1-800-227-2346.

Data Communications, Computer Networks, and Open Systems. Fred Halsall. Addison-Wesley, Menlo Park, Calif.

Guide to Connectivity 3rd Ed. Frank Derfler, Jr., Ziff-Davis Press, Emeryville, California.

Student Learning Outcomes:
1) Students shall develop an understanding of basic Data Communications, networking topologies, the OSI Model and the IEEE 802 standards. Determined by Exam #1
2) Students shall observe the installation and use of various networking platforms from the SPX/IPX and TCP/IP environment. Determined by Exam #2
3) Student shall develop skills in IP subnetting, and understand the use of IP addresses, and the fundamentals of IP routing.
Determined by Exam #3

4) Through the integration of data communications, topologies, IEEE 803 standards, networking platforms, and subnetting, students shall develop a basic background of the components of a modern computer network..
Determined by Final Exam

TOPICS and OUTCOMES for CSCI 525
WEEK 1 August 31
Review of Numbering Systems Binary, Decimal, Octal, Hexadecimal representation
Review Boolean Functions
WEEK 2 September   7 HANDOUT#1
Topics:
   Signal Modulation (AM,FM,PM); Asynchronous Serial & Synchronous Serial Communications;
   Encoding Techniques.
WEEK 3 September 14 HANDOUT #2
Topics:
   Transmission Media; Multiplexing; Switching Techniques; Networking Topologies; Channel Access Methods.
WEEK 4 September 21 HANDOUT #3
Topics:
   Open Systems; Open System Interconnection Reference (OSI Model); The Physical Layer (Layer 1);
   The Data Link Layer (Layer 2) - HDLC, SDLC, Cyclic Redundancy Checking (CRC).
WEEK 5 September 2 HANDOUT #4
Topics:
   IEEE 802 Standards; MAC-Media Access Control; LLC-Logical Link Control; CSMA/CD;
   Token Bus; Token Ring; ARCNet; LAN Comparison.
WEEK 6 October 5 EXAM #1
WEEK 7 October 12 HANDOUT #5
Topics:
    IEEE 802.11 Wireless Networks
WEEK 8 October 19 Handout #6
Topics:
   NETWARE 3.2 Classroom Installation Demonstration; SPX/IPX; Server and Client Systems; File Systems and Partitions;   Memory Mapped I/O; NIC Configuration;
WEEK 9 October 26 HANDOUT #7
Topics:
    WINDOWS 2010 INSTALLATION Classroom Demonstration; File Systems; Domain Models;
    Active Directory ;
WEEK 10 November 2 Handout #8
Topics:
    Comparing Networking Environments: IPX/SPX, TCP/IP and NetBEUI
    TCP/IP Sockets and Ports; Examples in C++ and JAVA
     Review for EXAM #2
WEEK 11 November 9 - November 13 EXAM #2
WEEK 12 November 16 Handout #9
Topics:
    IP Subnetting Basics - Fundamentals and Examples
WEEK 13 November 23 EXAM #3
WEEK 14 November 30
Topics:
    LINUX Installation Classroom Demonstration; course review
WEEK 15 December 7 - December 11 Final Exam

Grade Determination:
Test #1=20%   Test #2=20%   Test #3=20%   Final Exam=40%

Class attendance is required. Five points will be deducted from the final grade average for each unexcused absence from class. If you have 4 or more unexcused absences, you will be dropped from the course with a (DF) Drop Fail. Please inform me of any circumstances which may prevent you from attending class.

Approximate grade calculation: A= 90-100   B= 80-89   C= 70-79   D= 60-69   F=Below 60

1. If you come into class after attendance is taken, it is considered an absence. If you have a special circumstance, which prevents you from being in class on time, please come see me.

2. Do your OWN work. Do not loan homework to a fellow student. It may be copied. It is OK for students to help each other and to share ideas and knowledge. However, students should do their own work. While it is sometimes difficult to check for originally, please be aware that students who do their own homework will perform better on the exams. Student who do not do the assignments are more likely to fail the exams. Please also be aware that any students who is caught cheating during an exam, as a first offense, will receive the grade of "F" on that exam. Students with a second offense of cheating will receive the grade of "F" in the course.

3. Any student caught cheating on an exam will receive the grade of "F".

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).

EARLY INTERVENTION FOR FIRST YEAR STUDENTS:
Early intervention for freshmen is designed to communicate the University's interest in their success and a willingness to participate fully to help students accomplish their academic objectives. The university through faculty advisors and mentors will assist students who may be experiencing difficulty to focus on improvement and course completion. This process will allow students to be knowledgeable about their academic progress early in the semester and will provide faculty and staff with useful data for assisting students and enhancing retention. Grade reports will be mailed by the end of the sixth week of the semester.

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
Gee Library, Room 132
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
StudentDisabilityServices@tamuc.edu

A&M-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

INFORMATION ON NETWORK CERTIFICATION EXAMS:
Historically, there are three basic Networking Certifications:

CNE (Certified Netware Engineer) - developed by Novell
MCSE (Microsoft Certified System Engineer) - developed by Microsoft
CCNA (Cisco Certified Network Administrator) - developed by Cisco Systems.

The CNE is centered around Novell's Netware, the MCSE is centered around Microsoft's Windows NT, and the CCNA is centered around Cisco's routers and switches. **However, there is a central core of knowledge that is common to ALL Certifications**. It is the purpose of this course to present that common core of knowledge. The students will be exposed to Windows NT 4.0, Novell's Netware 3.12 and (possibly 5.0) and to Cisco's IOS for programming routers. Most of the Operating System material is presented as "hands-on" examples and exercises to be performed in the lab. Please note the Netware 3.12, a much older of a DOS-based networking system, is used as an introductory system because it is DOS-based network and thus much of the internals are more easily accessible than in the Windows NT environment. Much of what the student learns with Netware 3.12 is directly applicable to Windows NT.
After taking this course, students, who are interested in pursuing the CCNA or the MCSE, will have gained the necessary skills and knowledge to easily embark upon a route of self study.