CST K232 Course Syllabus

Spring 2011

Course: CST K232 – Data Communications and Networking

Program: Computer Science – Technology

Hours: Lecture M 5:20 pm–8:05 pm (Room B/227) Lab M 8:10 pm-9:50 pm (Room B/227)

Instructor: Allan Anderson
Office: Room C106
Office Hours: Campus Office Hours: Monday (4:00 pm - 5:15 pm)
Wednesday (1:00 pm - 2:00 pm, 5:15 pm - 6:00 pm)
Messages: Blackboard Vista Mail preferred
Phone: (860) 885-2392 (Voice Mail)
E-mail: aanderson@trcc.commnet.edu

Delivery Format: on-ground with limited online via Blackboard Vista

Dates: Jan. 24 – May 16. No class Feb. 21 and Mar. 14

Textbook: Raymond R. Panko, *Business Data Networks and Telecommunications: Eighth Edition*, Pearson Prentice Hall, 2011. Author's web site: http://www.prenhall.com/panko/

Course Objectives: The main objective of this course is to teach students the fundamental concepts underlying current networking technologies. Specifically at the course completion students will be able to describe, explain and discuss modern networking features including but not limited to the following:

Networking Technologies	**Network Operations**
• Describe basic network terminology • Understand the importance of database design • Explain the five basic layers of standards in the TCP/ IP-OSI Hybrid Standards Architecture. • Discuss message ordering in general and in HTTP and TCP. • Discuss message syntax in general and in Ethernet frames, IP packets, TCP segments, UDP datagrams, and HTTP request and response messages. • Explain unshielded twisted- pair (UTP) wiring. • Describe the differences between serial and parallel transmission. • Describe optical fiber cabling, including relevant propagation effects and different types of optical fiber cabling and signaling. • Describe Ethernet physical layer standards and how they affect network design. • Describe the Ethernet data link layer and the Ethernet MAC layer frame. • Explain basic Ethernet data link layer switch operation. • Describe wireless LAN technologies. • Explain radio bands, bandwidth, and channels. • Distinguish between normal and spread spectrum transmission. • Describe 802.11 WLAN operation. • Define hierarchical IP addresses, networks and subnets, border and internal routers, and masks. • Describe router operation when a packet arrives, including ARP. • Explain IPv4 fields and IPv6 fields. • Describe cloud computing (including Software as a Service, utility computing, and virtualization).	• Explain encoding application messages into bits. • Explain vertical communication on hosts. • Describe the threat environment, including types of attackers and types of attacks. • Explain the Plan- Protect- Respond cycle for security management. • Describe firewall protection, including stateful inspection. • Explain in detail the protection of dialogues by cryptography, including symmetric key encryption for confidentiality, electronic signatures, and cryptographic system standards. • Explain 802.11 WLAN security. • Explain 802.11 wireless LAN management. • Explain basic TCP/ IP, IP, TCP, and UDP concepts. • Explain TCP/ IP management: IP subnet planning, Network Address Translation (NAT), Multiprotocol Labor Switching (MPLS), the Domain Name System (DNS), DHCP servers, and the Simple Network Management Protocol (SNMP). • Discuss communication over the Internet via SSL/ TLS and IPsec VPNs and via IP carrier services. • Explain client/ server architectures, including file server program access and client/ server processing (including Web- enabled applications).

Lab Assignments: Weekly assignments from the end of chapter problems or from additional instructor handouts will be given. The hand-in format will be via Blackboard Vista unless otherwise noted. Class assignments should be submitted on or before the due date and time. A late assignment will lose 20% of the score for that assignment if submitted late. No assignments will be accepted after the cutoff date. Assignments will be graded on professionalism, accuracy, style and completeness. The details for each assignment, including work to be done and the due date and cutoff date, will be posted in that assignment's drop box. Students are encouraged to interact with the instructor or other students on these assignments via Blackboard Vista discussion boards but must personally perform the necessary actions to complete the assignments.

Grading and Evaluation Criteria:

25 % of the grade is based on a midterm examination
25 % of the grade is based on a final examination
25 % of the grade is based on chapter examinations
25 % of the grade is based on assigned labs

Final course grades will be assigned as objectively as possible, according to the following scale (a class curve may be used at the discretion of the instructor):

90 - 100%	A- to A
80 - 89%	B- to B+
70 - 79%	C- to C+
60 - 69%	D- to D+
59% and Below	F

College Withdrawal Policy:
Students may withdraw, through the Registrar's Office, for any reason. For the Spring 2011 semester, this last date to do this is May 9. The withdrawal process must be initiated by the student. Failure to do so will result in a semester grade based on the work completed before the student stopped attending the class.

Academic Integrity: Students are expected to do their own work in this class. Working together to better understand the material is acceptable. Submitting duplicate work is not and will adversely affect the assignment grade. Actively participating in the discussion boards both to ask and to answer questions is expected of all students. Posting of detailed instructions for "how to" responses to questions is encouraged but posting of a complete solution is not. Example violations include but are not limited to:

- Copying or sharing a file or any portion of a file from another student.
- Sharing or allowing another student to copy your files or any portion of a file.
- Duplicating or distributing copies licenses for software programs and/or services.
- Unauthorized access or use of university computers, computer systems or computer network.

Students with Disabilities: If you are a student with a disability and believe you will need support services and/or accommodations for this class, please contact the Disabilities Support Services at TRCC. Please note that the instructor cannot provide accommodations based upon disability until the instructor has received an accommodation letter from the Disabilities Counselor.

Week	Topics	Text Assignments
1 1/24	Networking: How We Got Here	Chapter 1 & 1a
2 1/31	Network Standards	Chapter 2 & 2a
3 2/7	Network Security	Chapter 3 Chapter 1 & 2 Test
4 2/14	Network Management	Chapter 4 & 4a
5 2/28	Physical Layer Propagation	Chapter 5 & 5a Chapter 3 & 4 Test
6 3/7	Switched Wired Networks	Chapter 6 & 6a
7 3/21	Wireless Networks I	Chapter 7 Chapter 5 & 6 Test
8 3/28	Review	Mid-Term Exam
9 4/4	Wireless Networks II	Chapter 8
10 4/11	TCP/IP Internetworking	Chapter 9 Chapter 7 & 8 Test
11 4/18	Internetworking II	Chapter 10
12 4/25	More on TCP and IP	Module A
13 5/22	More on TCP & IP	Chapter 10 Chapter 9 & 10 Test
14 5/9	Networked Applications	Chapter 11 Chapter 11 Test
15 5/16		Final Exam

Note: The foregoing course outline is subject to change as conditions warrant.