BCIS 4680 -- BUSINESS DATA COMMUNICATIONS and NETWORKING

Mr. Cengiz Capan -- Spring 2015

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Course Objectives

1. Develop an understanding of the data communications industry, its players, and the skills necessary to successfully participate in this industry.

2. Develop an understanding of how to combine the fundamental concepts of data communications and networking with particular applications. While technology and applications change rapidly, the fundamental concepts evolve much more slowly. This course provides the foundation from which new data communications and networking technologies and applications can be compared, understood, and evaluated.

3. Develop an understanding of logical network analysis and design with a hands on team project creating a logical design of a company network.

4. Develop an understanding of Local Area Network (LAN) hardware and software configurations via a hands on team project configuring the file server hardware and installing the network operating system.

5. Develop an understanding of a network administrator's responsibilities via a hands on team project installing a company network from the previously designed logical network (users, groups, applications, and data).

6. Develop an understanding of Wide Area Networking (WAN) and its relationship to the telecommunications industry and its services.

7. Develop an understanding of principles of Wide Area Networking such as switching and transmission architectures and exploring the emerging WAN services and technologies such as ISDN, frame relay, NONET, SMDS, and ATM.

8. Develop an understanding of enterprise networks and client-server architectures.

9. Develop a dynamic thinking process to be able to operate as information architects in an often confusing and changing industry.

Required Text

Jerry FitzGerald and Allan Dennis, ***Business Data Communications and Networking (BDC) – 11th edition***, Wiley, 2011.

Ted Simpson, **MCSE/MCSA Guide to Installing and Managing Microsoft Windows XP Professional and Windows Server 2003 (WIN)**, Thomson Course Technology, 2006.

Course Content

Please see the attached course outline.

Student Evaluation

ACTIVITY	PERCENT
1. Test 1……	23
2. Test 2……	26
3. Test 3……	23
4. 8 Quizzes……	8
5. Assignments	
Company Network Logical Design (LD).	10
Server and Workstation Installation……	10
TOTAL …….	**100**

Software to be Used in this Class

Windows Server 2003, Active Directory, TCP/IP, and Virtual PC

Course Policy:

1. Assignments are due **by the beginning of class on the due date. Late assignments will not be accepted** and a grade of zero will be assigned for the missing work. Incomplete or incorrect assignments will be heavily penalized.

2. The grade of "I" is not given except for appropriately documented emergencies (illness or death) and then only within the guidelines of stated University policy.

3. Students will adhere to the highest professional and ethical standards. Those caught cheating are penalized to the maximum allowed by University policy, which includes a final course grade of "F" and referral to the Dean of Students for disciplinary action.

Cheating includes collaboration on any outside assignments, which might be made on an individual basis for a grade, including regular homework assignments and the preparation of projects for submission. It also includes plagiarism, unauthorized preparation of notes for use on examinations, use of such notes during an examination, looking at another student's examination answers, allowing another student to look at your own examination answers, or the requesting or passing of information during an examination.

This policy is intended to protect the honest student from unfair competition with unscrupulous individuals who might attempt to gain an advantage through cheating. Students who become aware of suspicious activities on the part of others are asked to promptly notify the professor so that immediate corrective action can be taken.

4. It is the student's responsibility to satisfy all requirements of this course as specified in the course outline, by the instructors, in the University catalogues, and by the academic calendar. This outline and the academic calendar are published to allow students to schedule their activities in advance. Hence, ignorance of class or university requirements will not be acceptable. Check the academic calendar for drop dates.

5. The College of Business Administration complies with the Americans with Disabilities Act in making reasonable accommodation for qualified students with disability. If you have an established disability, as defined in the Americans with Disabilities Act and would like to request accommodation, please see me as soon as possible. You should bring with you the appropriate materials from the Disabilities Accommodation Office.

DATE	TOPIC
1/20	**THE NEW WORLD and THE GROWING IMPORTANCE OF DATA COMMUNICATIONS** **Real Time**-the collapse of time and space; the changing technology infrastructures
1/22&27	**Binary Numbers, IP Addressing, Default Subnet Masks, the Address Resolution Protocol (ARP),** Subnetting and Creating Custom Subnet Masks
1/29	**INTRODUCTION TO DATA COMMUNICATIONS -- (BDC, ch 1)** History of data communications; data communications networks; network models-Open Systems Interconnection (OSI) reference model; network standards; future trends
2/3	**APPLICATION LAYER -- (BDC, ch 2)** Application architectures (host-based architectures, client-based architectures, client-server architectures); World Wide Web (how the Web works, inside an HTTP request, inside and HTTP response, electronic mail, inside an SMTP packet, attachments in MIME); File Transfer Protocol (FTP); Telnet: instant messaging; videoconferencing
2/5&10	**NETWORK AND TRANSPORT LAYERS -- (BDC, ch 5)** Transport and network layer protocols (Transmission Control Protocol/Internet Protocol (TCP/IP), Internetwork Packet Exchange/Sequenced Packet Exchange (IPX/SPX, X.25, System Network Architecture (SNA)); Transport Layer functions (linking to the Application Layer, segmenting, reliable delivery); addressing (assigning addresses, address resolution); routing (types of routing, routing protocols, multicasting); TCP/IP examples (known addresses same subnet, known address different subnet, unknown address, TCP connections, TCP/IP and network layers)
2/12	**DATA LINK LAYER -- (BDC, ch 4)** Media access control (controlled access, contention, relative performance); error control (sources of error, error prevention, error detection, error correction, forward error correction); data link protocols (asynchronous transmission, asynchronous file transfer protocol, synchronous transmission); transmission efficiency
2/17	**PHYSICAL LAYER -- (BDC, ch 3)** Circuits (circuit configuration, data flow, communication media); digital transmission of digital data (coding, transmission modes, digital transmission, how Ethernet transmits data); analog transmission of digital data (modulation, capacity of a voice circuit, how modems transmit data); digital transmission of analog data (translating from analog to digital, how telephones transmit voice data); analog digital modems; multiplexing (frequency division multiplexing, time division multiplexing, how DSL transmits data)
2/19	**===== TEST ONE =====**

DATE	TOPIC
2/24	**THE NETWORK PROJECT OVERVIEW**
2/26	**DESIGNING THE NETWORK -- THE LOGICAL DESIGN**
3/3	**LOCAL AREA NETWORKS – (BDC, ch 6)** LAN Components; Traditional Ethernet (IEEE 802.3); Switched Ethernet; the Best Practice LAN Design; Improving LAN Performance; Implication for Management
3/5	**INTRODUCTION TO WINDOWS and NETWORKING -- (WIN, ch 1)** The Microsoft Networking Family; Windows Server 2003 Editions; Windows Networking Concepts Overview, Workgroups; Domains; Introduction to Windows Server 2003 Active Directory (AD); Domain Name Services; Active Directory Objects; Active Directory Schema; Installing Active Directory; Planning the Active Directory (define organizational structure, planning and implementing AD Schema)
3/10	**WORKING WITH MICROSOFT VIRTUAL PC (WIN Appendix D)** **INSTALLING WINDOWS SERVER 2003 (WIN Appendix C and Handouts)**
3/12	**CREATING A DOMAIN --** Installing AD on two Servers; configuring DNS for AD, Joining Clients and Servers to the Domain, Testing AD Replication Between Servers, Creating and Managing OUs
3/17&19	**SPRING VACATION – UNIVERSITY CLOSED**
3/24	**CREATING and MANAGING DOMAIN USER and GROUP ACCOUNTS – (WIN, ch 7)** Introduction to Domain User Accounts; User Authentication; Creating and Managing Domain User Accounts; Working with User Profiles; Working with Domain Group Accounts; Using Command-line Utilities
4/2&7	**MANAGING FILE SYSTEM ACCESS and SECURITY -- (WIN, ch 9)** Creating and Managing Shared Folders; Managing Shared Folder Permissions; Working with NTFS Permissions; Combining Shared Folder and NTFS Permissions; Using Offline Files; Working with the Distributed File System; Configuring Advanced Attributes
4/9&14	**IMPLEMENTING and USING GROUP POLICY – (WIN, ch 8)** Windows Registry Overview; Registry Editors; Working with Group Policies; Managing Group Policy Inheritance; Deploying Software with Group Policies
4/16	**IMPLEMENTING and MANAGING NETWORK PRINTING -- (WIN, ch 10)** Windows Printing Concepts; Installing and Sharing Printer Resources; Publishing Printers in Active Directory; Troubleshooting Printer Problems
4/21	**===== TEST TWO =====**
	PROJECTS DUE

DATE	TOPIC
4/23	**BACKBONE NETWORKS -- (BDC, ch 7)** Backbone network components (switches, routers, gateways); backbone network architectures (backbone architecture layer, routed backbone, collapsed backbone, virtual LAN); backbone technologies (asynchronous transfer mode); the best practice backbone design (architecture, effective data rate, conversion between protocols); improving backbone performance (improving computer and device performance, improving circuit capacity, reducing network demand)
4/28	**METROPOLITAN AND WIDE AREA NETWORKS -- (BDC, ch 8)** Circuit-switched networks (basic architecture, plain old telephone service, integrated services digital network); dedicated-circuit networks (basic architecture, T-carrier services, synchronous optical networks); packet switched networks (basic architecture, X.25, Asynchronous Transfer Mode (ATM), Frame Relay, Switched Multimegabit Data Service (SMDS), Ethernet/IP Packet networks; virtual private networks (basic architecture, VPN types); the best practice MAN/WAN design; improving MAN/WAN performance
4/30	**NETWORK SECURITY -- (BDC, ch.10)** Why network need security; types of security threats; network controls; risk assessment (develop a control spreadsheet, identify and document the controls, evaluate the network's security); controlling disruption, destruction and disaster; controlling unauthorized access
5/5	**NETWORK DESIGN -- (BDC, ch 11)** The traditional network design process; needs analysis (geographic scope, application systems, network users, categorizing network needs, deliverables); technology design (designing clients and servers, designing circuits and devices, network design tools, deliverables); cost assessment (request for proposal, selling the proposal to management, deliverables); designing the network performance (managed networks, network circuits, network devices, minimizing network traffic)
5/7	**NETWORK MANAGEMENT -- (BDC, ch.12)** Organizing the network management function (the shift to LANs and the Internet, integrating LANs, WANs, and the Internet, integrating voice and data communications); configuration management (configuring the network and client computers, documenting the configuration); performance and fault management (network monitoring, failure control function, performance and failure statistics); end-user support (resolving problems, providing end-user training); cost management (source of cost, reducing cost)
5/12	**===== TEST THREE =====**