



MASTER OF SCIENCE IN BIOMEDICAL
INFORMATICS PROGRAM
College of Osteopathic Medicine,
Health Professions Division
Nova Southeastern University

Course Title: Telecommunications and Networking in Health Care

Course Number: MI 5153

Course Credits: 3 credit hours

Course Director: Christopher B. Sullivan, PhD
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Faculty: Dr. Christopher B. Sullivan, PhD

Dates: May 12, 2014 – August 3, 2014

Days and Time: Three live classroom synchronous presentations
Tuesday, 05/20/2014 – 7:00-8:00 PM (Eastern Daylight Time)
Tuesday, 06/17/2014 – 7:00-8:00 PM (Eastern Daylight Time)
Tuesday, 07/15/2014 – 7:00-8:00 PM (Eastern Daylight Time)

Place: Online / Distance Education, Blackboard

Course Description:

Understanding telecommunications and networking is imperative for the operation of health care organizations. Understanding data management is critical due to the convergence of computing and telecommunications and the increasing number of IT applications in health care and medical facilities. Knowledge of these key areas of information systems is essential for competitive advantage. This course combines the basic technical concepts of data communications, telecommunications and networking with the health care IT management aspects and practical applications.

Course Materials:

William Stallings and Tom Case, *Business Data Communications: Infrastructure, Networking and Security, 7th Edition*

Publisher: Prentice Hall (September 7, 2012), ISBN-10: 0133023893 and ISBN-13: 978-0133023893

The class text is available at www.amazon.com for \$135.48 in hard cover, \$110.64 for Kindle and \$37.91 as a rental. New and used copies are available for lower prices, but make sure you buy the 7th Edition. You can also purchase the book directly from the publisher, Prentice Hall, for \$167.20 or you can buy the eTextbook for \$66.99. See: <http://www.mypearsonstore.com/bookstore/business-data-communications-infrastructure-networking-9780133023893?xid=PSED>

Course Structure and Requirements:

This course will require all students to participate in eight week-long discussion boards that will discuss the contents of the required course text. In addition, there are four written assignments will be due every third week. All written assignments are due by Saturday 11:55 PM Eastern Time, on their corresponding week. Week-long discussions close on Saturday evening at 11:55 PM. The instructor will conduct three live classroom sessions using Blackboard, in which the content will be delivered using chat and PowerPoint. The content covered in the live sessions will complement the recommended course text.

In Summary:

- There will be four written assignments (see “Assignment” section below).
- Eight weekly discussion boards (initial discussion topic will be posted by instructor).
- Students will submit work using Blackboard.
- Students will need access to a personal computer and have basic word-processing skills using Microsoft Word and PowerPoint.
- No software will be required for this course, other than having MS Office to submit assignments.

Course Goals:

To provide students with a foundation for managing telecommunication and computer networks and the ability to plan for health care network implementation projects, while keeping IT in compliance with health care regulations. This knowledge will enable the students to apply their skills in private or government health care facilities.

Course Learning Objectives:

At the end of the course, the students should be able to:

- Identify current concepts of data communications and networking and how to implement them in a medical treatment facility.
- Execute a network implementation by having managerial knowledge of the technical aspects of data communications and computer networks.
- Identify various security risks to a network and ways to minimize them.
- Assess the current trends in telecommunications and networking and the implications for health care and medical facilities.
- Analyze legal compliance requirements that organizations must comply with while implementing and supporting health care information networks. (i.e., HIPAA regulations and JCAHO standards).
- Communicate the basic concepts of information assurance and its implications in network economy.
- Evaluate the implementation and use of wireless networks in medical facilities to enhance patient care and increase the efficiency of providers.
- Determine how emerging end-user devices in the health care arena impacts computer networks, system security HIPAA Security compliance and integrate with electronic health records.

Evaluation Format:

The evaluation format of this course includes: essay-based assignments, class participation including discussion boards and Live Classroom sessions.

Grading Policy:*Written Assignments*

Written assignments are outlined below. Students will be given a specification sheet for each written assignment that will provide details on what expectations underlie the assignment and how content can be organized. All assignments are to be submitted through the Blackboard assignment drop box, unless otherwise specified in the explanation of the assignment. The assignment drop box enables you to receive a confirmation of the assignment submission. You should set the notification up in case of any concerns regarding on time submission of assignments. If you submit a paper, but a notification of receipt is not received, you are responsible to follow up and ensure that the assignment is received. There will be a 10 point grade loss per day for late submissions of written assignments. Assignments not submitted within six (6) days of the deadline - without prior arrangements with the instructor - will receive a grade of zero (0) for the assignment. The deadline for written assignments will be Saturdays at 11:55 PM (Eastern Time). Each written assignment is worth 100 points out of a total of 1,000 points.

Week-long Discussions

Week-long discussions are your opportunity to ask questions, go over class material and contribute to a lively debate about the importance of telecommunications in health care. Discussions will be initiated and moved forward by the instructor, but any participant is welcome to start a discussion thread. All discussions will end on Saturdays, 11:55 PM (Eastern Time). Each week-long discussion is worth 60 points out of a total of 1000 points.

Live Classroom Sessions

Attendance at two of the three scheduled online Live Classroom sessions is required. Students are responsible for following the progress of the course. Failure to attend at least two of the Live Classroom sessions - without prior arrangement with and approval from the instructor - is considered an unexcused absence and you will receive no Live Classroom credit for the session missed. This will be reflected in your final grade. The two required live classroom sessions are worth 50 points out of a total of 1000 points. The third, voluntary session, will be worth 50 points.

Course Schedule for 12 Week Summer Session 2014:

Week	Date	Reading Topics and Chapters	Blackboard Discussions	Writing Assignments
1	May 13, 2014	0. Introduction 1. Introduction 2. Business Information 3. Distributed Data Processing	Discussion Board #1 Case Studies I & II	
2	May 20, 2014	4. Data Transmission 5. Data Communication Fundamentals	Online Presentation: <i>Health Information Exchange</i>	Written Assignment #1 due
3	May 27, 2014	6. Data Link Control and Multiplexing 7. The Internet	Discussion Board #2 Case Studies III & IV	
4	June 3, 2014	8. TCP/IP 9. Client/Server, Intranet, and Cloud	Discussion Board #3 Case Study V	
5	June 10, 2014	10. Internet-Based Applications 11. Internet Operation	Discussion Board #4 Case Study VI & VII	Written Assignment #2 due
6	June 17, 2014	12. LAN Architecture and Infrastructure 13. Ethernet, Switches, and Virtual LANs	Online Presentation: <i>Broadband and Health Care Networks</i>	
7	June 24, 2014	14. Wireless WANs	Discussion Board #5 Case Study VIII	
8	July 1, 2014	15. WAN Technology and Protocols 16. WAN Services	Discussion Board #6 Case Study IX	Written Assignment #3 due
9	July 8, 2014	17. Wireless WANs	Discussion Board #7 Case Study X	
10	July 15, 2014	18. Computer and Network Security Threats 19. Computer and Network Security Techniques	Online Presentation: <i>Security Issues for Health Care Networks</i>	
11	July 22, 2014	20. Network Management (Online)	Finish final paper	Written Assignment #4 due
12	July 29, 2014	21. Network Planning & Design (Online)	Discussion Board #8 Case Study XI	

Written Assignments:

The four following assignments are due for the corresponding week indicated. Additional specifications for each assignment will be provided at the beginning of the course.

Assignment #1 (Week 3, Due: May 24, 2014)

Assignment 1 will ask you to write an “as-is” telecommunications and network assessment of your place of employment and to develop a plan to leverage a new Internet-based infrastructure to increase efficiency, manage data and maximize organizational resources. For example, optical fiber transmission and satellite communications have increasingly become vital parts of the network architecture for many health care organizations. You could describe how using one channel versus the other would impact your organization by summarizing the advantages or disadvantages of each telecommunication channel using case studies or your own experience.

Assignment #2 (Week 6, Due: June 14, 2014)

Assignment 2 will ask you to write a discussion paper on the pros and cons of developing a health information exchange within a hospital system and among the physicians in the community who are credentialed by each hospital. Assume the network consists of eight hospitals, each having related clinics and physicians in the community. Each hospital has its own LAN and finds it is very difficult to get enterprise or clinical data quickly. You are asked to prepare a report describing the differences between distributed data processing centers versus making the transition to a centralized data processing model, with the expected benefits and potential drawbacks after the project is complete.

Assignment #3 (Week 9, Due: July 5, 2014)

Assignment 3 will ask you to write a proposal of a network acquisition and implementation plan for a medical campus environment that will support 100 faculty & staff members and 1,200 students. There will be an estimated 1,500 computers in this health care campus, connected to a LAN that hosts a local server and data center with a wireless network for instructors, staff and students. You will be asked to consider the required networking devices that can be used by end users and to list proposed equipment and high level costs.

Assignment #4 (Week 12, Due: July 26, 2014)

Assignment 4 will ask you to write a research paper on network security for health care providers implementing electronic health records and health information exchange in your state. You will be asked to discuss HIPAA regulations for privacy and security of protected health information, technical and policy controls that must be implemented by health care providers, requirements of Meaningful Use and state statutes that mandate patient authorization for the release of protected health information.

Grading Criteria

Written Assignments

Written assignments will be graded based on the specifications distributed for each assignment, which will specify expected depth of content and discussion of important points. Grading will be conducted based on a set of points assigned to each specification for the assignment. In general, to receive an excellent grade each assignment must display a clear understanding of the topic and demonstrate some insight into its relevance and an adequate discussion of its importance in the context of health care.

All written assignments must exhibit good composition, as well as the proper formatting, proper grammar and no misspellings. Each typo, grammatical error or misspellings will earn one point deducted from the final grade. Each writing assignment is complete and on time when submitted by the date and time

specified. Missed or late assignments or assignments that clearly display a lack effort will be given a poor or failing grade.

Each written assignment should have a title page with your name, the course number and title appropriate to the assignment number and date due. All text should be double-spaced. References should be cited according to the APA manual (Publication Manual of the American Psychological Association. See: <http://www.apastyle.org/learn/tutorials/basics-tutorial.aspx>). Assignments will be graded and returned within one week of the due date.

Keep in mind: No matter how knowledgeable you are about a topic, if the work you submit is unclear or confusing to the reader, then the message conveyed is that you don't have a full understanding of the subject matter. So make sure your assignments are clear and concise.

Discussion Boards

Discussion topics will be posted each week for you to respond to. The responses should reflect your reading of the class text book and should be thoughtful and of value. You may want to use research or other technical and policy references to support your comments and ideas.

To receive full credit for participation, you must actively participate in the discussion board at least three (3) of seven (7) days each class week, posting your answers to the questions and your responses on three different days. Postings should include a substantive response that includes a minimum of one reference as a basis for your response to questions and comments. Substantive responses should show you have read your classmates' responses and responded to two or more classmates and other related materials. This is the where your points get earned. "I agree" is not appropriate response.

Messages should add meaningfully to the class discussion. Your participation is evaluated based on the degree to which you have given evident thought to the subject and are able to apply critical thinking and analysis to the readings and discussion. You should also cite references to support your position. Participation also means that you are generating "food for thought" comments and questions for your fellow classmates and are responding to their messages and discussion responses. Effective discussion responses do not need to be long. Please do not substitute quantity for quality.

Participation in the classroom discussion contributes a great deal to what each of us learns in the online classroom. Exploring new information and insights from the reading material together and relating it to our own professional and personal experience adds richness and depth to the online learning environment. I hope that you will dive right in to our discussions! This course will depend heavily on the postings for learning. **Remember, the week begins on Monday and ends on Saturday.**

Scoring of Assignments and Generation of Final Grade

Each assignment will be scored based on clear expectations and written specifications. Discussion boards will be graded based on the frequency of submissions to the discussion and on the appropriate and substantive nature of the online comments. Written assignments will be graded based on the expectations laid out in the assignment specification sheets, which will be distributed prior to each assignment. Points for the live online chats will be assigned when you identify yourself at the beginning and end of the chat session. Points earned over the course of the semester will be added up at for a possible total point score of 1,000 points.

Assignment	Points per Assignment	Total Points
Eight (8) Discussion Boards	60	480
Four (4) Written Assignments	100	400
Two (2) Live Online Presentation	50	100
Extra Live Online Presentation	50	50
Total		1,050

Grading Scale

Your final grade will be calculated by dividing your final point score by 1,000. For example, a total point score of 950 divided by 1,000 (950/1,000) would yield .95 or 95%, which would be an A. This scoring methodology will be used to calculate your final grade.

Please pay attention to the fact that this method of grade scoring is linear and additive, so work not done in the beginning of class (missed discussion boards, for example) can come back to haunt you. The best way to score well in this class is to maintain consistency of effort. Regular grade updates will be sent to you to help keep track of your grade relative to the class schedule.

Class Points	Grade	QP Equivalent
94 - 100	A	4.0
90 - 93	A -	3.7
87 - 89	B+	3.3
84 - 86	B	3.0
80 - 83	B-	2.7
77 - 79	C+	2.3
73 - 76	C	2.0
70 - 72	C -	1.7
Below 70	F	0.0