

# HIMT435SP17 - Data Communications and Networks in Healthcare

## Course Description and Overview

This course provides fundamentals of data communications and networking techniques, and examines the linkage of information technology strategies and technological solutions enabling effective communication within and between health care organizations. Major topics include fundamental concepts of data communications and applications, network communication devices, basic technologies of the local area network (LAN), backbone network, wide area network (WAN), Internet and the Web, the OSI stack, health care information systems standards, health care information exchange (HIE), and Nationwide Health Information Network (NHIN).

## Course Objectives

Upon completion of this course, you will be able to:

1. Understand hardware and software components of telecommunications systems and how they are organized to provide required services.
2. Present architecture, topologies, and protocols of telecommunications and computer networks.
3. Describe Health Level Seven (HL7) standards.
4. Understand HIE and major health care network standards.
5. Research and discuss issues pertinent to the emerging technologies and network applications in health care.

## HIM Curriculum Competencies

This course does not address any competencies directly.

## Course Materials

Required Textbook

## Course Outline

The course is organized into 5 units and 16 lessons. The course is delivered through a mixture of readings, lectures, hands-on exercises, case studies, and assignments.

- Unit 1: Introduction
  - Lesson 1: Introduction to Data Communications and Computer Networks
  - Lesson 2: History and Evolution of Health Care Information Systems

- Unit 2: Fundamental Concepts of Data Communications and Networking Techniques
  - Lesson 3: Application Layer Part I
  - Lesson 4: Application Layer Part II
  - Lesson 5: Physical Layer Part I
  - Lesson 6: Physical Layer Part II
  - Lesson 7: Data Link Layer
  - Lesson 8: Transport Layer
  - Lesson 9: Network Layer
- Unit 3: Networking Technologies
  - Lesson 10: Wired Local Area Network
  - Lesson 11: Wireless Local Area Network
  - Lesson 12: Backbone Network
  - Lesson 13: Wide Area Network
  - Lesson 14: The Internet
- Unit 4: Health Care Network Standards
  - Lesson 15: Health Care Network Standards and Health Level Seven (HL7)
- Unit 5: Health Information Exchange
  - Lesson 16: Overview of Health Information Exchange

## Course Activities

The course consists of the following activities and assessments.

<i>Activity</i>	<i>Assessment</i>
<b>Reading the textbook Viewing the videos (as available)</b>	Quiz for each lesson
<b>Discussion participation</b>	Graded within one week in D2L
<b>Completing the homework assignments</b>	Graded within one week in D2L
<b>Research Paper</b>	Evaluated at the end of class

## Course Policies

### Class Participation

Many assignments in this course require that you read each other's work to post a peer reply. Please do not read the work of other students prior to posting your original or first post on any assignment. The reason for this is to encourage original thought and creativity, and to avoid what is known as groupthink. In groupthink students seem to follow along with the first posts and reply similarly; this puts an undue responsibility on the person who has the courage to post first, and it may actually reduce the quality of your post if you structure yours like others already there. It is required that you view other students' postings in order to post your peer replies. The instructor reserves the right to grade students differently based on their participation in discussions and their failure to post their work prior to viewing the work of peers.

Late Assignment Submission

Homework assignments and projects not submitted by *the due date will not be accepted. This policy will be strictly enforced.*

Statement of Student Time Commitment

For each course credit, students are expected to spend a minimum of 3 hours/week on course work. Therefore, for a four-credit course, at least 12 hours/week are expected. This is a general guideline which may vary depending on the assignments and/or quizzes.

## Grading

Assignments	Percentages
Quizzes	45%
Assignments	25%
Final Research Paper	15%
Class Discussion & Participation	15%
<b>Total</b>	<b>100%</b>

## Grading Scale

Grade	Scale
A	90–100%
B	80–89.99%
C	70–79.99%
D	60–69.99%
F	< 60.00%

## Course Calendar

Date	Topic Covered	Assigned Readings	Assignment	
			Assigned Tasks	Due Date
Week 1	<b>Lesson 1: Introduction to Data Communications and Computer Networks</b>	FD Ch.1	Quiz 1 Discussion 1 Assignment #1	
Week 2	<b>Lesson 2: History and Evolution of Health Care Information Systems</b>	WLG Chapter 4	Quiz 2 Discussion 2 Assignment #2	
Week 3	<b>Lesson 3: Application Layer Part (I)</b>	FD Ch. 2	Quiz 3 Discussion 3	<b>Assignment #1 due</b>

Week 4	<b>Lesson 4: Application Layer Part (II)</b>	FD Ch. 2	Quiz 4 Discussion 4 Assignment #3	<b>Assignment #2</b>
Week 5	<b>Lesson 5: Physical Layer Part (I)</b>	FD Ch. 3	Quiz 5 Discussion 5	
	<b>Lesson 6: Physical Layer Part (II)</b>	FD Ch. 3	Quiz 6 Discussion 6 Assignment #4	<b>Assignment #3 due</b>  <b>Email Research Topic.</b>
Week 6	<b>Lesson 7: Data Link Layer</b>	FD Ch. 4	Quiz 7 Discussion 7 Assignment #5	<b>Assignment #4 due</b>
Week 7	<b>Lesson 8: Transport Layer</b>	FD Ch. 5	Quiz 8 Discussion 8 Assignment #6	<b>Assignment #5 due</b>
Week 8	<b>Lesson 9: Network layer</b>	FD Ch. 5	Quiz 9 Discussion 9 Assignment #7	<b>Assignment #6</b>  <b>Research Proposal due</b>
Week 9	<b>Lesson 10: Wired Local Area Network</b>	FD Ch. 6	Quiz 10 Discussion 10	<b>Assignment #7 due</b>
Week 10	<b>Lesson 11: Wireless Local Area Network</b>	FD Ch. 6	Quiz 11 Discussion 11 Assignment #8	<b>Assignment #8 due</b>
Week 11	<b>Lesson 12: Backbone Network</b>	FD Ch. 7	Quiz 12 Discussion 12	
Week 12	<b>Lesson 13: Wide Area Network</b>	FD Ch. 8	Quiz 13 Discussion 13 Assignment #9	
Week 13	<b>Lesson 14: The Internet</b>	FD. Ch. 9 & WLG Chapter 9	Quiz 14 Discussion 14	<b>Assignment #9 due</b>

Week 14	<b>Lesson 15: Health Care Network Standards and Health Level Seven (HL7)</b>	WLG Chapter 10	Quiz 15 Discussion 15 Assignment #10	<b>Assignment #10 due</b>
Week 15	<b>Lesson 16: Overview of Health Information Exchange</b>	WLG Chapter 6	Discussion 16	<b>Final Research Paper due:</b>