

**ISE 473 – Using Digital Information Systems to
Improve Healthcare**
Robert McDonald

Instructor's Contact Information

Office: Mohler Lab #367

Phone: 802-233-6806

Email: rbm216@lehigh.edu

Office Hours: By appointment

Course Information

Term: Spring 2020

Timing, Wed: 1:35PM-4:05PM

Location: Iacocca Hall E301

Course Description

This is a course about the use of digital information systems (DIS) to improve healthcare delivery. We will focus on if/how DIS can positively impact the “triple aim” of cost/quality/access. We will also focus on the use of DIS as a vehicle for the systematic transformation of how and where healthcare is being delivered.

Digital information systems are composed of five elements; hardware, computer software, telecommunications, databases and warehouses, and human resources using systematic procedures to run the system.

Digital information systems include; electronic medical records (EMR,s); health information exchanges (HIE,s); predictive data analytics, e-prescribing and dispensing; telemedicine, ambulatory phone apps; the Internet of Things (IOT) to connect wearables & digital monitors to measuring the patient's health status.

We will examine the main drivers of digital healthcare via the HITECH Act of 2008 and the commercial motivations of Google, Alphabet, Amazon, Apple and many of the medical device manufacturers like Medtronic

The course material will be examined against six broad themes that are reshaping American healthcare:

- Delivering a better healthcare experience
- Enhancing patient care with better clinical data
- Improving the connectivity between various patient information systems
- Improving communication between providers and the patient
- Facilitating transparency in price of healthcare
- Creating value-based healthcare

To date many uses of DIS have been duplications of written or verbal communication about patient care. Often DIS has at best focused on a transaction and few have shown the ability to be transformational in the ways DIS has been used to transform industries like financial services, telecommunications, airline travel and retail.

One of the most surprising, some would say shocking, aspects of U.S. medical care is the frequency of medical errors. The course will explore the role and impact of digital tools using evidence-based medicine as tools to reduce medical errors

By the end of this course, students will be able to

- (1) Understand the evolution of digital information technology systems
- (2) Appreciate some of the unique nomenclature of DIS
- (3) Explain the differences between data and information in healthcare
- (4) Understand why DIS have not, to date, been transformative of care process

Prerequisites

There are no pre-requisites for this course.

Textbook

Information Systems For Healthcare Management; Eight Edition; Gerald Glandon, et.al. ISBN 978-1-56793-599-8

Health Informatics A Systems Perspective; Gordon Brown et.al. Second Edition LCCN 2018026342

Extensive use of other source material will include journal articles, white papers and newspaper articles

Resources

Library materials, periodicals, newspapers, and particularly Internet resources may be used for research and other information gathering purposes.

Assignments and Grading

Classroom participation, three exams and a case study in lieu of a final exam will be used as the basis for your grade.

Classroom participation will count for 20% of your grade. You will need to read each chapter or other assigned material in advance of the lecture to have a basis for meaningful classroom participation. If you choose not to participate in classroom discussions your final grade will be reduced by at least one half of a grade i.e. an “A” will be graded as an “A-“

etc.

I will make separate arrangements for distance students for their weekly classroom participation.

During the last week of the semester I will assign and discuss a case study that will be a “take home” assignment. It will be due by May 8th.

Classroom participation	20%
Exam #1	20%
Exam #2	20%
Exam #3	20%
Case Study	20%

Grading Scale

95-100	=	A
90-94	=	A-
87-89	=	B+
85-86	=	B
80-84	=	B-
77-79	=	C+
75-76	=	C
70-74	=	C-
67-69	=	D+
65-66	=	D
60-64	=	D-
<60	=	F

Attendance

Students are responsible for all material covered in class (of course if you don't attend you will not be able to participate in the classroom discussions) and other assigned reading materials.

Missed Deadlines

Credit will not be awarded for late work, **unless prior approval for tardiness** has been obtained.

The Principles of Our Equitable Community:

Lehigh University endorses The Principles of Our Equitable Community [http://www.lehigh.edu/~inprv/initiatives/PrinciplesEquity_Sheet_v2_032212.pdf]. We expect each member of this class to acknowledge and practice these Principles. Respect for each other and for differing viewpoints is a vital component of the learning environment inside and outside the classroom.

Accommodations for Students with Disabilities:

If you have a disability for which you are or may be requesting accommodations, please contact both your instructor and the Office of Academic Support Services, University Center C212 (610-758-4152) as early as possible in the semester. You must have documentation from the Academic Support Services office before accommodations can be granted.

Logistics

A note on office hours for all students, I am available for “virtual office hours”, conducted via Phone, Zoom or other digital methods. Please contact me if you want to meet outside of the regular classroom. This includes both on-campus AND distance students.

Schedule

On the next page, please find a **tentative** schedule for this semester. Please be advised that dates or specific topics may change.

Technology in the classroom

If you find it necessary to email or text during classroom lectures please feel free to leave the room

Week #	Week Start	Weekday	Topic/Deliverable
Week 1	22-Jan	Wed	Introduction to 473 & Chapter One; “Health Informatics”
Week 2	29-Jan	Wed	Chapters One & Two; “Information Systems”
Week 3	5-Feb	Wed	Chapters Three & Nine; “Information Systems”
Week 4	12-Feb	Wed	Chapters Three & Four; “Health Informatics”
Week 5	19-Feb	Wed	Exam; Weeks One, Two, Three, Four & Special Topic
Week 6	26-Feb	Wed	Chapters Nine & Eight; “Health Informatics”
Week 7	4-Mar	Wed	Chapters Ten; “Information Sys” & Health Informatics
	9-Mar		Spring Break
	13-Mar		
Week 8	18-Mar	Wed	Sp Topic, Systems Science & Health Systems Science
Week 9	25-Mar	Wed	Exam: Weeks Five, Six, Seven, Eight & Special Topics
Week 10	1-Apr	Wed	Re-examining the role of E.H.R.’s
Week 11	8-Apr	Wed	Will Google, Amazon and Apple transform healthcare
Week 12	15-Apr	Wed	Chapter Fifteen; “Health Informatics”
Week 13	22-Apr	Wed	Chapter Sixteen; “Health Informatics”
Week 14	29-April	Wed	Exam, weeks Nine, Ten, Eleven, Twelve, Thirteen
	1-May		Last Day of Classes. & Case Studyredtruck