**Course Syllabus**

GTx: 64401

# Health Informatics: A Current and Historical Perspective

**Professor:** Mark Braunstein

**Course Description:** This course provides a broad, non-technical overview of health informatics today along with some perspective on the history of the field and the challenges it has sought to overcome for the past few decades. Interviews and case studies are provided to help connect the didactic material to the real world.

**Prerequisites:** None

**Course Goals:** At the end of this course you will:

- Have an appreciation of the field of health informatics both from a historic as well as a contemporary point of view.
- Have a broad understanding of the uniquely complex and expensive US healthcare system. You be familiar with some key online sites that you can use to further explore your own country's healthcare system and its challenges as compared to the US and other countries.
- Have a reasonably detailed understanding of the most important applications of health information technology to patient care. These are electronic health records for use by providers such as physicians and nurses; patient facing technologies such as the personal health records and mobile health devices and some of the traditional technologies for sharing of health information.

**Grading Policy:** This course has one graded activity that can be completed using available public web tools. A passing grade is 70% of above. There are no quizzes. The graded activities are intended to supplement the teaching so students are allowed unlimited chances to answer the questions but there is a two hour delay before a new answer can be entered.

**Attendance Policy:** This is a fully online self-paced course. You can work on it as you have time and over whatever total time period works for you.

**Plagiarism Policy:** Plagiarism is considered a serious offense. You are not allowed to copy and paste or submit answers to the activity questions created or published by others, as if you did the work yourself. All work on the activities must be your own.

**Student Honor Code**
All Audit and Verified learners are expected and required to abide by the letter and the spirit of the edX honor code

- Audit and Verified learners should review the edX Honor Code https://www.edx.org/edx-terms-service
- You are responsible for completing your own work.
- Any Audit or Verified learner found in violation of the edX Honor Code will be subject to any/all of the actions listed in the edX Honor Code

**Communication:** All learners should ask questions, and answer their fellow learners' questions, on the designated course discussion forum. Often, discussions with fellow learners are the sources of key pieces of learning. Discussion forums may not be used to seek answers to questions posed in the graded activities or to help other students successfully complete those activities.

**Netiquette**

- Netiquette refers to etiquette that is used when communicating on the Internet. Review the Core Rules of Netiquette. When you are communicating via email, discussion forums or synchronously (real-time), please use correct spelling, punctuation and grammar consistent with the academic environment and scholarship[1].

- Learners who do not adhere to this guideline may be removed from the course.

1. Conner, P. (2006-2014). Ground Rules for Online Discussions, Retrieved 4/21/2014 from http://teaching.colostate.edu/tips/tip.cfm?tipid=128

**Course Outline**

**Module 1 - Some Background**

1.1 - Introduction

1.2 - A Brief History of Health Informatics

1.3 - Exciting Times: *How the health informatics landscape is being transformed by FHIR, the long sought solution to sharing of health data (interoperabiity)*

1.4 - eICU Interview: *A dramatic example of how FHIR based interoperability can have a positive impact on patient care.*

**Module 2 - The US Healthcare System**

2.1 - Introduction: *The US healthcare system is an outlier as compared to peer countries in virtually all respects.*

2.2 - High Costs, Mediocre Results: *The US spends far more than peer countries but generally obtains mediocre results.*

2.3 - The Uninsured Can Raise Costs (part 1)

2.4 - The Uninsured Can Raise Costs (part 2)

2.5 - The Payment Model: *Healthcare in the US is a business that responds to its economic incentives.*

2.6 - Waste

2.7 - Chronic Disease Drives Most Costs: *Why patient facing technologies are potentially so important.*

2.8 - Dr. Gerard Anderson Interview

2.9 - Alternate Care Models: HMO

2.10 - Alternate Care Models, The Patient Centered Medical Home

2.11 - Alternate Care Models: Accountable Care Organizations

2.12 -The Role of Health Informatics

2.13 - Toward a Learning Healthcare System: *A proposed solution to many of the challenges facing US healthcare also provides the key link to the role of informatics.*

2.14 - Informatics for a Learning Healthcare System

2.15 - Case Study: Dr. John Sweeney Onsite at Emory: *Along with the next interview, an example of how informatics can help physicians make better decisions.*

2.16 - Case Study: Dr. James C. Cox Onsite at Emory

**Module 3 - Health Informatics in the Real World Today: Electronic Health Records**

3.1 - Introduction

3.2 - The Adoption Challenges

3.3 - HITECH: *How federal intervention led to broad EHR adoption from a near zero base.*

3.4 - EHR vs. EMR: *The expanded view of electronic records in a connected world.*

3.5 - Health IT Certification

3.6 - Meaningful Use

3.7 - Physician EHR Satisfaction: *Usability is an issue facing increasing focus now that most physicians are using EHRs.*

3.8 - EHR Grand Challenges: *Some of the key EHR design challenges facing future developers.*

**Module 4 - Health Informatics in the Real World Today: Patient Tools**

4.1 - Introduction

4.2 - Personal Health Records (PHR)

4.3 - PHR Challenges

4.4 – **HealthVault Exercise NEEDS TO BE REPLACED OR FIXED SOMEHOW**

4.5 - Medilo's FHIR App

4.6 - Care Evolution's FHIR Based PHR Introduction

4.7 - Care Evolution's FHIR Based PHR

4.8 - Apple's FHIR Based PHR: *Arguably the most significant step yet taken toward widespread use of informatics by patients.*

4.9 - Blue Button on FHIR Introduction

4.10 - Blue Button on FHIR Interview

4.11 - OpenNotes: *What happens if patients are given direct access to their physician's notes?*

4.12 - OpenNotes Helps Make Care Safer: Effective Communication

4.13 - Open Notes Helps Make Care Safer: Stronger Partnerships

4.14 - PatientsLikeMe Introduction: *The pioneer in social networking among patients with a common disease.*

4.15 - PatientsLikeMe Interview

4.16 - Telehome Care

**NEW Webchart Activity**

**NEW NoMoreClipboard Activity**

**Module 5 - Health Informatics in the Real World Today: Health Information Exchange (HIE)**

5.1 - Introduction to Interoperability: *A three level view of this complex topic.*

5.2 - Clinical Information Modelling Initiative (CIMI)

5.3 - Applicadia Introduction

5.4 - Applicadia Example

5.5 - Semantic Interoperability Through Machine Learning

5.6 - Interoperability and Meaningful Use

5.7 - HIPAA: *The key US law governing the handling of sensitive health data.*

5.8 - Privacy

5.9 - Security

5.10 - Trust

5.11 - Blockchain for Healthcare, Jeff Garzik Interview: *A blockchain pioneer discusses its potential roles in healthcare.*

5.12 - Health Information Exchange Direct: *How secure email is used to share healthcare data.*

5.13 - Health Information Exchange: HL7 Messaging: *The first successful technology for health data sharing is still in wide use thirty years later.*

5.14 - Health Information Exchange: Semantic Interoperability

5.15 - OHDSI/OMOP Dr. Jon Duke Interview 1

5.16 – Health Information Exchange challenges

5.17 – The Future of Health Information Exchange

**Course Materials/Textbook**

- All content and course materials can be accessed online
- There is no required textbook for this course but students interested in a text can purchase the instructors book *Health Informatics on FHIR: How HL7's New API is Transforming Healthcare*

**Technology/Software Requirements**

- Internet connection (DSL, LAN, or cable connection desirable)
- Adobe Acrobat PDF reader (free download; see https://get.adobe.com/reader/