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SYLLABUS for CSc 890 – *Health Informatics*

Course Prerequisite:

Senior or graduate standing in Computer Science or Senior or graduate standing in Public Health or MBA health care emphasis or consent of instructor

Text:

Health Informatics: Practical Guide for Healthcare and Information Technology Professionals (Sixth Edition) By ***Robert E Hoyt, Ann Yoshihashi,***
Ebook ISBN 978-0-9887529-2-4
(Paperback ISBN 978-1-304-79110-8)

Topics:

Health Informatics – Introduction and Overview
Health Information Systems Overview
Electronic Health Records
Computerized Provider Order Entry
Clinical Decision Support Systems
Patient Monitoring Systems
Medical Imaging Systems
Consumer Health Informatics
Administrative, Billing, and Financial Systems
Privacy & Security

Oral Presentations:

Students will present a few articles found in the literature. Acceptable journals are those found in the text, as well as others, with prior approval by me. You will present your review(s) to the class during regular meetings. We will agree upon a time for presentation. I will provide a template for your presentations.

OpenMRS Software (openmrs.org):

This is free and open source software. You will work in teams to install the system (with sample data), as well as work on projects using OpenMRS.

Practice Fusion (www.practicefusion.com):

This is a free, cloud-based, medical record system used in the United States. You will work in teams to learn how to implement a practice with this system, as well as compare its capabilities/features with OpenMRS

ilearn Course Management System

We will use the ilearn course management system during this term. If you have used touch-tone registration for the course then you are already registered in this

system. Use your SFSU id and personal access code to login to the system. The address to use for login is:

<https://ilearn.sfsu.edu/login/index.php>. Be sure to update your user profile to include the email address where you wish to receive course email from me.

If you don't have an SFSU email account then you should first browse to <http://www.sfsu.edu/infotech.htm> and follow the *Help Desk* link to determine how to obtain an SFSU internet account.

Be sure to browse the ilearn system as soon as possible to learn about the resources available therein – e.g. discussion lists/FAQ's, grades, announcements. I will frequently make announcements (change due dates, etc.) which will not appear in print. YOU are responsible for all announcements made in class!! I will also post messages to the ilearn system.

You are encouraged to interact in ilearn discussions. You may send private email messages to me. However, if your messages do not divulge homework solutions then I will require you to use ilearn. Subsequently, I would like class members to provide answers. This style of interaction is used extensively in practice so it's important for you to gain relevant experience.

Attendance:

“Students are expected to attend classes regularly because classroom work is one of the necessary and important means of learning and of attaining the educational objectives of the institution.” (SFSU Bulletin) To this end, attendance will be taken at different times through the term. Students missing class on a day of attendance will lose attendance points.

GRADING : (approximate)

Oral Presentations	35%
OpenMRS Software	35%
(produce report, de-identify data, export of data from OpenMRS for analytics, propose new features)	
Final	22 %
Attendance	3 %
Class Participation	5%
(e.g participation in lectures, ilearn, etc.)	

Missed Exams:

Generally, there will be no make-up exams and no incomplete grades given. If you miss an exam, you must notify me before the exam or, if physically impossible, soon after. If any of the scheduled exam dates are in conflict with your religious observances, you must notify me, in writing, at least two weeks in advance of the exam. If you have an acceptable, documented excuse, you may be given a make-up exam or be given the average score of other exam(s) at the discretion of the instructor. Note that a make-up exam will consist of questions/exercises that might have a degree of difficulty that does not match those on the original exam.

Course Objectives

The objectives of this course include:

- Understand how vocabularies convert data to information
- Understand the importance of data standards, interoperability, as well as the importance of clinical summaries such as Continuity of Care Documents (CCDs) or Continuity of Care Records (CCRs)
- Understand the components of a medical record system, including interoperability and health information exchanges
- Recognize the importance of data security and privacy
- Understand the concepts of confidentiality, availability and integrity
- Understand the notion of consumer health informatics and its use
- Understand the notions of mHealth, telehealth, telemedicine, and public health informatics
- Understand radiological imaging technologies such as PACS and mobile imaging viewer

Learning Outcomes

At the end of this course students will be able to:

- Identify the forces behind health informatics
- State the potential impact of the HITECH Act on health informatics in the United States
- Describe the limitations of paper-based health records
- Identify the benefits and key components of electronic health records
- Describe the ARRA-HITECH programs to support electronic health records
- Describe the benefits and challenges of computerized order entry and clinical decision support systems
- Identify the need for and benefits of health information exchange (HIE) and interoperability
- Enumerate the reasons data standards are necessary for interoperability
- Describe privacy and security measures that are part of HIPAA, HITECH Act, and Meaningful Use and how they fit into the national health IT strategy
- Describe key features of privacy and security, including authentication, encryption, and standards

- Identify and discuss consumer health informatics (CHI) tools
- Discuss the features of personal health records
- List the various ways mobile technology is currently being used in healthcare, along with the associated benefits, risks and costs
- List various telehealth/telemedicine options
- Describe picture archiving and communication systems (PACS), associated standards and system architectures
- Describe public health informatics (PHI)

Disability Access

Students with disabilities who need reasonable accommodations are encouraged to contact the instructor. The Disability Programs and Resource Center (DPRC) is available to facilitate the reasonable accommodations process. The DPRC is located in the Student Services Building and can be reached by telephone (voice/TTY 415-338-2472) or by email (dprc@sfsu.edu). <http://www.sfsu.edu/~dprc>

Student Disclosures of Sexual Violence

SF State fosters a campus free of sexual violence including sexual harassment, domestic violence, dating violence, stalking, and/or any form of sex or gender discrimination. If you disclose a personal experience as an SF State student, the course instructor is required to notify the Dean of Students. To disclose any such violence confidentially, contact:

The SAFE Place - (415) 338-2208; http://www.sfsu.edu/~safe_plc/

Counseling and Psychological Services Center - (415) 338-2208; <http://psyservs.sfsu.edu/>

For more information on your rights and available resources: <http://titleix.sfsu.edu>

Sample of Suggested Topics for Oral Presentations

Select articles from the Journal of the American Medical Informatics Association (JAMIA - <http://jamia.bmj.com/>); the SFSU library does not subscribe to this journal. However, there seem to be many articles available to download free – browse to the JAMIA web site to check if that can be done for your article. If you cannot download an article of interest then you can use the library resources to make an ILLiad request for the article (<http://www.library.sfsu.edu/services/requesting/>)

Several specific areas of interest include:

Personal health records

Privacy/security

Cloud based emr systems

Use of encrypted databases for emr

Health/tablets (community health workers, tele health, communication with patients); viruses/hacking?

Medical record system impact on clinic/hospital workflow

Medical record system management with power outages

Telehealth used to support developing countries, especially in contexts with low availability of health expertise

Adoption of medical record systems

Health information exchanges

Automated monitoring of medication adherence (e.g. wise pill device); integrate in OpenMRS?