



The Catholic University of America
School of Library and Information Science

HIT573 – Information Systems in Health Care Fall 2012

Credit Hours: 3
Prerequisites: None
Classroom: Pangborn Hall 301
Class time: 7-9:30 pm W

Instructor: Marie-Michelle Strah, PhD
Office: Adjunct Office, 2nd floor, Marist Hall
Phone: 202-455-6594
Email: TBD
Office Hours: 5:00-6:30 pm W or by appointment

Course Description

The purpose of this course is to introduce students to the application of information technology to health care information systems and health care organizations. The course provides an overview of four major components of this domain, which are (1) Health Care Information (2) Health Care Information Systems (3) Information Technology and (4) IT Management Challenges. Students are encouraged to think about the “How” and the “What” of health care information technology systems. The “How” refers to technology that supports health care information systems: data, standards, interoperability, data exchange and re-use, preservation, access, discovery, security, and privacy of clinical data/information (EMR or EHR). The “What” refers to an introduction to the types of health care information data (clinical administrative and combination) and data/information quality. The course provides a historical context for health information systems or data stores and how health care organizations and professionals use these systems to deliver patient care, conduct clinical research or manage the economics of health care. At the intersection of the “How” and “What” the course introduces students to the life cycle and implementation of health care information systems, government regulation and IT challenges that are faced by senior management health care administrators and technologists. Finally the course provides the health information science student with an introduction to e-science, cyber-infrastructure for data driven science and the evolution of scholarly communication and publishing.

Course Objectives

At the end of the term, students will be able to:

1. Identify a set of core competencies to understand the relationships and intersections of Information Technology, Regulations and Standards, Health Care Data and Health Information Systems.
2. Compare and contrast various definitions of health care information systems, and the content and use of patient records.
3. Discuss the relationship between health care data and health care information and know the challenges associated with measuring and ensuring health care quality.
4. Understand how accreditation and licensure influence the information needs of health care facilities.
5. Know how health care information systems have evolved over the past half-century and how health care professionals use clinical information systems.
6. Know the processes and workflows that are involved in the acquisition and implementation of health care organization.

Required Textbook

Wager, K. A., Lee, F. W., and Glaser, J. P. (2009). **Health Care Information Systems: A Practical Approach for Health Care Management**. 2nd Ed. San Francisco, CA: Jossey-Bass A Wiley Imprint.

Additional readings are assigned for each week's lecture topic. See lecture schedule below. **This is initial program for the course – readings are subject to change during the semester. You will be given advance notice of syllabus updates.**

Required Technologies

The following capabilities are required for course delivery:

- CUA network and systems (Home@CUA, CUA email system, etc.)
- Use ALADIN to find books and articles
- Use BlackBoard for course materials and discussion
- Meet the SLIS Technology Expectation (<http://slis.cua.edu/tech/base-tech.cfm>)

If you do not feel confident of your mastery of these skills, contact me before the course starts. I can help you find resources to fill in any gaps early in the semester. If you need any additional training, please attend SLIS technology workshop or contact Professor Joan Weeks at SLIS computing lab for assistance.

The following technologies are reviewed as part of this course:

- Information architecture: SDLC, SOA, etc.
- Basics of databases: Introduction to Relational DB

- Web based data encoding: Basic HTML and XML
- Web service standards: Introduction to SOAP/REST, WSDL, etc.

Course Requirements

Assignments and Grades

This course requires three assignments and a final group project. Each of these contributes towards your final grade. The assignments and their contributions are as below.

<i>Assignments</i>	<i>Percentage</i>	<i>Description</i>
Assignment 1	10%	Oral Presentation (Individual, Presentation)
Assignment 2	15%	Health Care Regulations and Policies (Individual, Short paper)
Assignment 3	25%	Health Care Information System Evaluation (Individual, Long paper)
Final Project	40%	Proposal for Designing Health Care System (Group, Paper and presentation)
Class Participation	10%	Class attendance, Discussion participation, Class activities

Final grades will be assigned as follows:

<i>Grade</i>	<i>Points</i>
A	94-100
A-	90-93.99
B+	86-89.99
B	82-85.99
B-	78-81.99
C	70-77.99
F	Below 70

University grades: The University grading system is available at <http://policies.cua.edu/academicgrad/gradesfull.cfm#iii>

Reports of grades in courses are available at the end of each term on <http://cardinalstation.cua.edu>

Class Participation

Each week is critical to your learning experience. You are expected to attend the class and read reading materials assigned each week prior to the seminar. **This is a graduate seminar: therefore students are expected to be active participants in the seminar. While lecture will comprise a part of each class session, this seminar is designed to be interactive and critical thinking and engagement are a critical component of student success.**

Each session will be comprised of a variety of activities designed to encourage interaction and participation.

- **We will have a 10 minute break after each 50 minute block per session.**
- **Given the diversity of the student body, we will have an assessment and evaluation on Week 1 to tailor course materials and group assignments to student backgrounds.**
- **While there are no course pre-requisites, students that have no technology background (education, work experience or combination) will be directed to HIT Program for additional training opportunities.**
- **Assignment 1 is designed to ensure that each student participates actively; we will also assign presentation dates on Week 1.**

Assignment 1: Oral Presentation

Each student is required to make an in-class presentation about one of the lecture topics. You will select one of the lecture topics that are listed in the lecture schedule. Conduct a study on the topic and introduce related tool(s), emerging issue(s), case projects, etc. Focus on one of these aspects on the topic and provide a 10-15 minute presentation in class.

Assignment 2: Health Care Regulations and Policies

Select one health care regulation or policy. Explain and discuss the health care regulation or policy and its impact on health care information systems implementation or acquisition. The paper should be 5-page long, double-spaced not including bibliography, and follow APA citation style. You will need to find any references or literatures as needed while doing the investigation.

Assignment 3: Health Care Information System Evaluation

For the example cases provided, you will select one case and find an existing health care information system that may solve problems of the example case. You will conduct system analysis on the selected health care information system. Consider all the elements that you need to consider in acquiring a system, and explain supporting information for analysis in the report. Your paper should be a standard research paper in both content and format. It should be approximately 8-10 pages in length, double-spaced not including bibliography, and follow APA citation style. Include any references or literatures as needed.

Final Project: Proposal for Designing Health Care System

For the team project, you will partner with other classmates to conduct an in-depth case study on the example cases provided. You will gain experience working on a technology project in a group for a health care environment. Your group is expected to create a health care information system design proposal based on the example case your group selected. You will follow the system development life cycle, conduct analysis, and use technology and skills learned in the course. Include any references or literatures as needed. For the final submission, you will submit a proposal document and present the project in class as a team.

Assignments and Project Submission Instructions

- Any documents you submit should be carefully proofread and formatted professionally. Any work submitted with numerous grammar, spelling or format problems will be penalized.

- All citations should be included with proper format of citation (APA style). Not indicating sources of information will be considered as plagiarism and will be graded as 0 point (Read Academic Honesty Policy below).
- Your submission documents should have course name, assignment topic/number, title, name(s), submission date indicated in the first cover page.
- Your submission should be uploaded through the Blackboard with the assignment topic/number indicated in the subject title.
- All assignments must be submitted by 11:59 pm on the day they are due, unless otherwise noted. If the assignment is submitted late, your grade will be reduced by 10%. Each day it is late thereafter you will lose an additional 5% point (e.g., submitting one day late would reduce your grade by 15%).
- Late work: The instructor will not accept late work except by prior arrangement. If accepted, it may not be graded until the end of the term.
- Makeup work: If a student has a legitimate reason, such as a medical or family emergency, the instructor may allow a student to do makeup work. The amount and nature of the work is up to the instructor's discretion. It will be graded at term's end. Documentation of the emergency (e.g. a doctor's letter) may be required.

Policies and Considerations

Academic Honesty Policy

Academic honesty is expected of all CUA students. Faculty are required to initiate the imposition of sanctions when they find violations of academic honesty, such as plagiarism, improper use of a student's own work, cheating, and fabrication. The following sanctions are presented in the University procedures related to Student Academic Dishonesty (from <http://policies.cua.edu/academicundergrad/integrityprocedures.cfm>):

"The presumed sanction for undergraduate students for academic dishonesty will be failure for the course. There may be circumstances, however, where, perhaps because of an undergraduate student's past record, a more serious sanction, such as suspension or expulsion, would be appropriate.

In the context of graduate studies, the expectations for academic honesty are greater, and therefore the presumed sanction for dishonesty is likely to be more severe, e.g., expulsion. ...

In the more unusual case, mitigating circumstances may exist that would warrant a lesser sanction than the presumed sanction."

Please review the complete texts of the University policy and procedures regarding Student Academic Dishonesty, including requirements for appeals, at <http://policies.cua.edu/academicundergrad/integrity.cfm>.

Accommodations for Students with Disabilities

Any student with a disability that will require accommodation under the terms of federal regulations should present a written accommodation request to the instructor by the second week of classes meeting. **The law includes accommodation for learning disabilities, Attention Deficient Disorder and anxiety disorders.** It is also recommended that the student contact the Office of Disability Support Services (202-319-5211) located in suite 207 in the Pryzbyla Center.

To read about the services and policies, please visit the website:

<http://disabilitysupport.cua.edu>

A Guide for services and accommodations for students with disabilities can be found at:

<http://counsel.cua.edu/ADA/publications/disbro/contents.cfm>

Some basic guidelines and links to other information may be found at:

<http://counsel.cua.edu/ADA/clicks/>

Campus Resources for Student Support

Academic Tutoring and Learning Assistance Service (ATLAS), <http://counseling.cua.edu/atlas/>

101 O'Boyle Hall

Phone: (202) 319-5018

CUA Counseling Center, <http://counseling.cua.edu/services/>

127 O'Boyle Hall

Phone: (202) 319-5765

Mullen Library, <http://libraries.cua.edu/welcome.html>

Phone: (202) 319-5070

CUA Writing Center, <http://english.cua.edu/wc/>

111 O'Boyle Hall

Phone: (202) 319-4286

Lecture Schedule

Week	Topics and Readings	Notes
Week 1	<p>Introduction to Health Care Information Systems</p> <p><Readings></p> <ul style="list-style-type: none"> • Chap. 4. History and Evolution of Health Care Information Systems • Chap. 5. Current and Emerging Use of Clinical Information Systems • Haux, R. (2006). Health information systems – past, present, future. <i>International Journal of Medical Informatics</i>, 75(3-4), 268-281. <p><Additional Readings and Resources></p> <ul style="list-style-type: none"> • HIMSS: www.himss.org • Healthcare Reform: www.healthcare.gov • ONC: http://www.healthit.gov/ • Health 2.0: http://www.health2con.com/ • Patient Engagement: http://reginaholliday.blogspot.com/ • Journal of Participatory Medicine : http://www.jopm.org/ • MedCityNews: http://medcitynews.com/?edition=health-it • Government Health IT: http://www.govhealthit.com/ 	
Week 2	<p>Health Care Data and Information</p> <p><Readings></p> <ul style="list-style-type: none"> • Chap. 1. Introduction to Health Care Information • Chap. 2. Health Care Data Quality • Safran, C., Bloomrosen, M., Hammond, E., Labkoff, S., Markel-Fox, S., Tang, P.C., and Detmer, D.E. (2007). Toward a National Framework for the Secondary Use of Health Data: An American Medical Information Association White Paper. <i>Journal of the American Medical Information Association</i>, 14(1), 1-9. 	

	<p><Additional Readings and Resources></p> <ul style="list-style-type: none"> • Joint Commission: www.qualitycheck.org • AHIMA Models http://perspectives.ahima.org/index.php?option=com_content&view=article&id=144:research-and-policy-model-for-health-informatics-and-information-management&catid=49:workforce&Itemid=94 and figures • HealthcareData.gov http://www.healthdata.gov/ • Blog: Healthcare Data Models Matter: http://www.healthcareguy.com/2005/12/22/repeat-after-me-healthcare-data-models-matter/ • Article: Can Big Data Save Healthcare? http://www.forbes.com/sites/colinhill/2011/11/17/can-big-data-fix-healthcare/ • Article: Technological Iatrogenesis: http://www.hom.ba.ttu.edu/FordPub/Palmieri_JHCRM_2008_Technological%20iatrogenesis.pdf 	
Week 3	<p>Health Care Information Regulations and Standards</p> <p><Readings></p> <ul style="list-style-type: none"> • Chap. 3. Health Care Information Regulations, Laws, and Standards • Chap. 9. Health Care Information System Standards <p><Additional Readings and Resources></p> <ul style="list-style-type: none"> • MITA: http://wayback.archive-it.org/2744/20110819000506/http://www.cms.gov/MedicaidInfoTechArch/Downloads/mitaoverview.pdf • NHIN: http://healthit.hhs.gov/portal/server.pt?open=512&mode=2&cached=true&objID=1142 • CCHIT / HITECH: http://healthit.hhs.gov/portal/server.pt/community/healthit_hhs_gov_regulations_and_guidance/1496 • NIST: http://www.nist.gov/computer-security-portal.cfm • ICD10 Conversion: http://www.cdc.gov/nchs/icd/icd10.htm • HL7: http://www.hl7.org/ • 42 CFR: http://www.law.cornell.edu/cfr/text/42 	
Week 4	<p>Technology for Health Care Systems</p> <p><Readings></p> <ul style="list-style-type: none"> • Chap. 8. Technologies That Support Health Care Information Systems • Weeks, J. (2009). Hypertext Markup Language (workshop material). http://slis.cua.edu/res/docs/tech/documents/HTMLwkshop-2009.pdf • XML Tutorial (w3schools), http://www.w3schools.com/xml/ • Database Tutorial. dot@mac. http://dotatmac.mcmaster.ca/db_basics/db_01_home.htm 	

	<p><Additional Readings and Resources></p> <ul style="list-style-type: none"> • Demo: OpenEMR http://www.oemr.org/ • Case Study: Productivity and Cloud http://www.microsoft.com/casestudies/Case_Study_Detail.aspx?CaseStudyID=4000010173 • NLP and UIMA: http://uima.apache.org/ • Connected Health Framework: http://www.microsoft.com/health/ww/ict/Pages/Connected-Health-Framework.aspx 	
Week 5	<p>Technology for Healthcare Systems II: Emerging Technologies</p> <p><Readings></p> <ul style="list-style-type: none"> • Revisit Chap. 8. Technologies That Support Health Care Information Systems • Revisit Chap. 5. Current and Emerging Use of Clinical Information Systems • Estrin, D. and Sim, I. (2010). Open mHealth Architecture: An Engine for Health Care Innovation. <i>Science Magazine</i>, 330(6005), 759-769. http://rds.epi-ucsf.org/ticr/syllabus/courses/2/2011/03/08/Lecture/readings/Sim_OpenmHealth_.pdf • Stroetmann, K. A., Artmann, J., and Stroetmann, V. (2011). Developing national eHealth Infrastructures – results and lessons from Europe. AMIA Annual Symposium Proceedings, 2011, 1347-1354. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3243126/pdf/1347_a_mia_2011_proc.pdf • Oladosu, J. B., Ajala, F. A., and Popoola, O. O. (2010). On the use of web services technology in e-Health applications. <i>Journal of Theoretical and Applied Information Technology</i>, 12(2). http://www.jatit.org/volumes/research-papers/Vol12No2/5Vol12No2.pdf <p><Additional Readings and Resources></p> <ul style="list-style-type: none"> • Health 2.0 Examples: http://www.meetup.com/DC-MD-VA-Health-2-0/events/45831982/ • Healthcare Transformation: http://www.dcmilitary.com/article/20120809/NEWS11/708099953/inovative-technology-smart-suites-launch-at-wrnmcc 	Assignment 2 Due
Week 6	<p>Health Care Systems Evaluation and Acquisition</p> <p><Readings></p> <ul style="list-style-type: none"> • Chap. 6. System Acquisition • Chap. 15. Assessing and Achieving Value in Health Care Information Systems • Wyatt, J.C. and Waytt, S.M. (2007). When and how to evaluate health information systems? <i>International Journal of Medical Informatics</i>, 	

	69(2-3), 251-259.	
Week 7	Health Care Systems Implementation I <Readings> <ul style="list-style-type: none"> • Chap. 7. System Implementation and Support • Berg, M. (2001). Implementing information systems in health care organizations: myths and challenges. <i>International Journal of Medical Informatics</i>, 64(2-3). 143-156. 	
Week 8	Health Care Systems Implementation II <Readings> <ul style="list-style-type: none"> • Revisit Chap. 7. System Implementation and Support 	
Week 9	Security of Health Care Information Systems <Readings> <ul style="list-style-type: none"> • Chap. 10. Security of Health Care Information Systems <Additional Readings and Resources> <ul style="list-style-type: none"> • Case Study: Sutter Health http://www.healthcareitnews.com/news/1b-suit-filed-against-sutter-health-over-data-breach • Case Study: VA http://epic.org/privacy/vatheft/ • Case Study: VA Incident Reporting http://www.va.gov/ABOUT_VA/docs/monthly_rfc_apr2012.pdf • Case Study: BIDMC http://www.fiercehealthcare.com/story/stolen-computer-beth-israel-deaconess-risks-3900-patients-info/2012-07-24 • Case Study: Blue Cross http://www.healthcare-informatics.com/news-item/blue-cross-blue-shield-tennessee-pays-15m-data-breach 	Assignment 3 Due
Week 10	Planning for Health Care Information Systems <Readings> <ul style="list-style-type: none"> • Chap. 11. Organizing Information Technology Services • Chap. 12. IT Alignment and Strategic Planning <Additional Readings and Resources> <ul style="list-style-type: none"> • Healthcare Enterprise Architecture: https://enterprisearchitecture.nih.gov/Pages/what.aspx • Example: PCHM Models: http://www.ncsl.org/issues-research/health/the-medical-home-model-of-care.aspx#models • http://www.aafp.org/online/en/home/publications/news/news-now/pcmh.html • Example: MHS Strategic Planning http://www.health.mil/MHSCIO/imitstratplan.aspx 	Final Project Progress Report
Week 11	Health Care Information Systems Management	

	<Readings> <ul style="list-style-type: none"> • Chap. 13. IT Governance and Management • Chap. 14. Management's Roles in Major IT Initiatives <Additional Readings and Resources> <ul style="list-style-type: none"> • Blog: Life as a Healthcare CIO http://geekdoctor.blogspot.com/2007/12/it-governance.html 	
Week 12	Guest Lecture: Panel and Discussion	
Week 13	Review of the Course Course Evaluation Final Project Presentation	
Week 14	Final Project Submission Final Project Presentation	