I. Catalog Description
Broad overview of healthcare information systems; close examination of business needs for the information technology (IT) to deliver cost-effective quality health services. Letter grade only (A-F).
Prerequisite: HCA 416, 502, 530 or consent of instructor.

II. Learning Objectives, Domain and Competencies
This course is designed to provide the healthcare professional with a broad understanding of information systems and information management in healthcare. This is not a course in computing, but rather an examination of the strategic and tactical business needs of the healthcare executive as they pertain to information technology (IT). A broad overview of healthcare information systems is provided, with a close examination of the critical information management needs required to deliver cost-effective, quality healthcare. The overall intent is to demystify the topic, build a foundation of knowledge, illustrate how IT can and should support the business, and provide tools for future use. Healthcare is an inherently information-intensive business, one that has generally lagged in fully and effectively exploiting information technology to help manage high volumes of information, reengineer processes, and generally mitigate mounting business pressures. Today’s healthcare managers require a working knowledge of IT as an important and distinguishing individual competency.

The student will be able to:
1. Demonstrate an understanding of intermediate IT terminology.
2. Develop an understanding of how to identify needs and opportunities involving IT.
3. Exhibit an understanding of the essential elements of IT planning and the importance of aligning business and IT planning.
4. Describe and discuss the methods to analyze and justify the cost of new systems.
5. Discuss the range of commercial system offerings in healthcare and how to “shop” for systems.
6. Negotiate basic system contracting issues and agreement protections.
7. Identify common pitfalls of system implementation and ways to overcome typical challenges.
8. Understand the components of Healthcare Reform, as they impact IT.

Student participation and regular class attendance are essential for course success.
Each learning objective is linked to a domain and a competency as listed in the Health Leadership Alliance directory: [http://www.healthcareleadershipalliance.org/directory.htm](http://www.healthcareleadershipalliance.org/directory.htm).

<table>
<thead>
<tr>
<th>Domain: Knowledge of HealthCare Information Technology (5)</th>
<th>Course Learning Objective</th>
<th>Competency: Knowledge of Activity, Assignment/Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Healthcare Information Systems</td>
<td>1. Demonstrate an understanding of intermediate IT terminology</td>
<td>1. Organization and delivery of healthcare IT 2. Key concepts of IT systems a. EMR (Electronic Medical Records) b. CPOE (Computerized Physician Order Entry) c. RIS (Radiology IS)</td>
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<tr>
<td>B. Healthcare IT and change management</td>
<td>1. Develop an understanding on how to identify needs and opportunities involving IT</td>
<td>1. Defining Healthcare end user requirements: a. Clinical b. Financial c. Physician Adoption Strategies</td>
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<tr>
<td>C. Electronic Medical Records</td>
<td>2. Exhibit an understanding of the essential elements of IT planning and the importance of aligning business and IT planning</td>
<td>1. Understanding the role of IT and connection to the business strategic plan 2. How to leverage IT in healthcare as a business driver</td>
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<tr>
<td>D. Strategic planning and the role of Healthcare IT</td>
<td>3. Describe and discuss the methods to analyze and justify the cost of new systems</td>
<td>1. Total Cost of Ownership (TCO) for an IS application 2. ROI (Return On Investment) for an application 3. Analyzing a value proposition</td>
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<td>4. Discuss the range of commercial system offerings in healthcare and how to “shop” for systems.</td>
<td>1. Demonstrating and understanding vendor management 2. HIS vendors on the market (i.e. Epic, Cerner, Meditech, Allscripts, NextGen)</td>
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<td></td>
<td>5. Negotiate basic system contracting issues and agreement protections.</td>
<td>1. Developing an RFP (Request For Proposal) 2. Explaining key HIS contract terms</td>
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</table>
III. Textbook and other course materials

Required Textbook:

Other course materials and readings are listed next to weekly lecture schedule in section V. Course lecture notes and additional readings will be available on BeachBoard. Lectures will include additional information from instructor’s explanations and current events.

Other Requirements: E-mail address and Internet access to use the online BeachBoard course software system. If you have problems with BeachBoard, contact the CSULB Technology Help Desk at 562-985-4959, via e-mail at helpdesk@csulb.edu or in-person at the Horne Center.

IV. Assignments and Grading

Class Preparation, Participation and Attendance:

The class format will be a combination of lecture and interactive discussion of the assigned readings and web sites. You are expected to have read the assigned readings prior to the class meeting and should be prepared to answer discussion questions that are listed in the syllabus for that week. Disabled students requiring special accommodations, please advise instructor at start of course.

These exercises are to be done in class - no exceptions except for excused absences. In case of excused absence, please email instructor ahead of time and make sure to turn it in the answers to discussion questions by the end of the class that same day that you are going to be absent. Late assignments will NOT be graded nor will the instructor entertain late requests for turning in these assignments.

Turn off and put away cell phones, computers and tablets during lectures and group presentations/discussions. You may use electronic devices for in-class exercises.

Homework Assignments:

Homework assignments are based on case studies or based on current articles. The details are given under the weekly schedule in Section V. Written responses should be submitted to BeachBoard drop box on the Thursday of the week on which the assignments are due by 11:30 pm.

Term Project: Healthcare IT Report and Presentation:

Your major assignment for this course is to select a current Health Information Technology and prepare an Executive level PowerPoint presentation, that you would deliver to the Executive Management Team of a Hospital, Health System or Medical Group, in order to convince them to approve the purchase or development and implementation of the Technology.

Imagine that you have already completed a business case, RFP and Vendor Selection process. Technologies you might consider include, but are not limited to Clinical Decision Support, Personal Health Records, Health Information Exchange, Bar Coding, Clinical Data Repository, RFID, Mobile Devices, etc.). Please do not select Electronic Medical Records systems, as this is overdone and most organizations have this in place already. Your presentation and related notes should address the following areas:
• Sales Pitch (20% of the grade)
  o For your “sales pitch,” you will need to understand Business Case Development, System Selection Process, Project Accounting – ROI, Payback Period, TCO (Total Cost of Ownership), and Strategic Alignment. Include these essential elements in your presentation.

• Technology Details (20% of the grade)
  o You will also need to do significant research to understand both the technology you are proposing as well as who the key players or vendors are who provide that technology.
  o You will need to understand how long it might take to implement, resources required to implement, and any business benefits that the technology will provide.
  o You will also need to understand what it will take to maintain and operate the system.
  o You may select a “Software as a Service” (SaaS) product, whereby a vendor is actually managing the application “in the cloud.”

• Performance Indicators (10% of the grade)
  o Include your key performance indicators (e.g., how will you measure success) and project deliverables.

• Additional Notes for Executives (10% of the grade)
  o There is no written paper assigned, but you should add additional detail into the notes section of your PowerPoint that will help bolster your case and provide more information to the executives.

• Submission to BeachBoard one week before the actual presentation date (5% of the grade)

• Bibliography (5 % of the grade)
  o Provide bibliography in APA format.

• Presentation
  o Slides – look, animations, format etc. (10 % of the grade)
  o Presentation Style (10% of the grade)
  o Q & A (10% of the grade)

A grading rubric will be available on BeachBoard. A randomly assigned presentation schedule will be posted on BeachBoard during 2nd week of class. Please inform the instructor of any conflicts in your schedules as soon as possible.

Project Deliverables:

1. Final Project Outline: Outline for Final Project in word or PowerPoint format. Outline should include a high level overview of key points that will be presented as part of your final presentation. Make sure to cover all the essential elements. Include bibliography if you have started working on it. Detailed outlines will receive detailed feedback.

2. Final Project Presentation: For the presentation, you should assume that you would only have about 20 minutes to present – so make the slides interesting with relevant pictures and graphics. You will find articles in recent issues of many of the health care technology journals, HIMSS website, and related publications, as well as in standard publications such as major urban/national newspapers (LA Times, NY Times, Washington Post, Wall Street Journal), the Internet) and general interest magazines such as Time, Newsweek, U.S. News and World Report, Business Week, Harvard Business Review, etc. The HIMSS website, www.himss.org, has a wealth of information on HIE, ACOs, ICD-10, EMRs, CPOE, Clinical Decision Support, etc. Other related publications are listed within this syllabus in the Healthcare Technology section. Full text of the enacted healthcare legislation that drives technology changes in Healthcare is available at: http://dpc.senate.gov/dpcdoc-sen_health_care_bill.cfm.
Examinations:

The final exam will be an essay exam with 10 questions, will be given in case study format and will cover topics from class. You will have two hours to complete the exam.

GRADING

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
<th>% of Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Participation (4 points total per class x 10 classes)</td>
<td>40</td>
<td>16%</td>
</tr>
<tr>
<td>Homework Questions/Article Abstracts (20 points x 5)</td>
<td>100</td>
<td>40%</td>
</tr>
<tr>
<td>Final Project Outline</td>
<td>10</td>
<td>4%</td>
</tr>
<tr>
<td>Final Project PowerPoint</td>
<td>50</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>50</td>
<td>20%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>250</td>
<td>100%</td>
</tr>
</tbody>
</table>

Final Letter Grades Assignment

- 225 points to 250 points A
- 200 points – 224 points B
- 175 points – 199 points C
- 150 points to 174 points D
- Less than 150 points F

V. Class Schedule, Readings, Discussion Questions and Homework Assignments

**WEEK 1: Dr. Martin Luther King Day** – No Class

**WEEK 2: January 26th – Introduction to Healthcare IT**

**Core Principles**
- Information as a transforming technology
- IT in Healthcare Organizations
- Introduction to Current Healthcare Concepts:
  - EMR
  - HIE
  - Clinical Decision Support Systems

**Readings**
- Chapter 1 course text

**DQ1: Discussion Questions**
- Please share your name, nickname (if any), current job/occupation or desired job if you are not currently working, and your expectations for this course.
- What do you believe is the primary impact of Healthcare Reform on Healthcare Information Technology?
- How is information technology in healthcare different today than it was 15 or 20 years ago?
WEEK 3: February 2nd - Clinical Vocabularies, Data and ICD-10

Core Principles
- Vocabularies / Uses of Data
- Interoperability
- ICD-10

Readings
- Chapter 2 course text
- CMS Website on ICD-10

DQ2: Discussion Questions
- How does ICD-10 differ from ICD-9?
- What are the considerations for a hospital or doctor’s office that is getting ready to convert to ICD-10?

WEEK 4: February 9th – Electronic Medical Records (EMR) Implementation

Core Principles:
- Electronic Medical Records
- EMR Implementation and Planning
- Clinical documentation workflow analysis

Readings
- Chapter 3, course text
- HIMSS Portal on EHR and Meaningful Use
- Medicare Meaningful Use Information
- “Health Care IT: The Right Dose of Technology Helps the Medicine Go Down,” CIO.com

DQ3: Discussion Questions
- What are some of the pitfalls of EMR implementation? What should a project manager watch out for?
- What is the difference between an Electronic Health Record and an Electronic Medical Record?

HW1: Homework due on Feb 12th by 11:30 pm to Beachboard dropbox
1. How are CMS requirements for “meaningful use” changing the practice of medicine?
2. Case study on Zenith Internal Medicine (from Chapter 3 in Brown et al.), what would you have done differently if you were the Project Manager?

WEEK 5: February 16th – Introducing Evidence Based Medicine

Core Principles
- Traditional role of healthcare professionals
- Micro and macro decision-making processes
- Evidence based clinical practice
- Expert Judgment
- Experiential knowledge
Readings
- Chapter 4, course text

DQ4: Discussion Questions
- What are the advantages to evidence-based medicine?
- Why do you believe there has been resistance?

WEEK 6: February 23rd – Strategic Valuation of Enterprise IT Systems

Core Principles
- Information, Infrastructure and architecture
- Interorganizational collaboration
- Value Measurement methodology
- IT Valuation
- IT investment
- Evaluation
- ROI (Return on Investment)
- Cost/benefit analysis
- Business case
- Economic value

Readings
- Chapter 14, course text
- Hospital IT Spending Jumps High

HW2: Homework due on Feb 26th by 11:30 pm to Beachboard dropbox
Article Abstract on Clinical Decision Support, Evidence Based Medicine: Find a journal article on either Evidence Based Medicine or Clinical Decision Support, and answer the questions in the Article Abstract Form posted on Beachboard. The article should ideally be dated on or after January 2014.

WEEK 7: March 2nd – Health Systems in the Information Age

Core Principles
- Transformational change in health systems
- Consumer driven healthcare
- Cloud computing
- Globalization

Readings
- Chapter 15, course text

Project Outline Due by March 5th 11:30 pm – submit to BeachBoard dropbox

WEEK 8: March 9th – Clinical Decision Support in Medicine and Nursing

Core Principles
- Clinical decision support systems
- Design, implementation and maintenance
• Human factors in computer and decision support system use
• Nursing clinical decision support
• Standards vs. local content

Readings

• Chapters 5 and 6, course text

DQ5: Discussion Questions

• What is a clinical decision support system, and how can it support the practice of evidence based medicine?
• Can you think of any additional opportunities for clinical decision support that are not discussed in the textbook?
• Project IMPACT case study (from Chapter 5 in Brown et al.) – what went well and what could have gone better? Explain. Discuss.

WEEK 9: March 16th – Clinical Transformation / Role of People

Core Principles

• HRM and HIT capabilities
• Process Redesign and Change Management
• “Pay Now or Pay Later”

Readings

• Chapters 7 and 10, course text
• “Process Improvement in Hospitals and Health Systems” – chapter on Process Redesign (Beachboard)

DQ6: Discussion Questions

• Why is it important to include people in system design projects?
• What is the role of process redesign in system implementation?
• How might the expression “Pay now or pay later” relate to Process Improvement and System Implementation?

WEEK 10: March 23rd – Knowledge Management, Predictive Analytics, Data Mining

Core Principles

• Knowledge Management
• Explicit, implicit, latent, and tacit knowledge
• Innovation and system transformation
• Knowledge-based systems
• Data mining
• Organizational (business) intelligence
• Learning/knowledge organizations

Readings

• Chapters 8 and 9, course text
• HIE Health Industry Insights HIE 2010 – on BeachBoard
• HIE GAO study on personal HIE – on BeachBoard
DQ7: Discussion Questions
- How can a Health Information Exchange (HIE) contribute to knowledge management for a healthcare organization?
- What is the role of knowledge management in Accountable Care Organizations?
- What is meant by predictive analytics and how is data relevant?
- What are good strategies for data mining?
- Case Study – present arguments for including patients and families in initial team discussions.

HW3: Homework due on March 26th by 11:30 pm to Beachboard dropbox

Article Abstract on Knowledge Management: Find an article related to knowledge management published on or after January 1, 2014. Answer the questions in the Article Abstract Form posted on Beachboard.

WEEK 11: March 30th – Spring Break!!

WEEK 12: April 6th – eHealth and Consumerism

Core Principles
- Consumer informatics
- e-health
- Telemedicine
- Tele home care
- Patient empowerment
- Disease management

Readings
- Chapter 11, course text
- HIE Health Industry Insights HIE 2010.pdf
- HIE GAO study on personal HIE.pdf
- Also refer to the following websites as needed:
  - www.webmd.com
  - www.mdconsult.com
  - www.uptodate.com
  - www.zynx.com
  - www.wolterskluwer.com
  - www.hospitalcompare.hhs.gov

DQ8: Discussion Questions
1. In your opinion what does consumer empowerment mean?
2. How do you think that consumerism will impact Healthcare IT over the next 5 to 10 years?

HW4: Homework due on April 9th by 11:30 pm to Beachboard dropbox

For each of the websites listed above, answer the following:
1. What is the intent of the website?
2. What is the product or service offered and who is the intended customer?
3. Which site(s) do you believe are the most valuable and why?
WEEK 13: April 13th – Genomic Medicine and Telemedicine

Core Principles
- Genomic Medicine
- Clinical genetics
- Bioinformatics
- Standardization

Readings
- Chapter 12, course text
- www.genetests.org
- Genomics is Here, But is Health IT Ready to Support It?, Health Data Management, Sep 4, 2012

DQ9: Discussion Questions
1. After reviewing the web sites and articles in the readings section, please describe Genomic information for clinicians and patients.
2. What are the three key barriers to the use of genetic information for the delivery of personalized medicine?

HW5: Homework due on April 16th by 11:30 pm to Beachboard dropbox
Article abstract on genomic medicine or telemedicine: Find an article related to knowledge management published on or after January 1, 2014. Answer the questions in the Article Abstract Form posted on Beachboard.

WEEK 14: April 20th – Health Information Privacy and Security, Social Engineering

Core Principles
- Security Architecture
- HIPAA Security
- Patient Confidentiality
- Auditing
- Contingency planning

Readings
- Chapter 13, course text

DQ 10: Discussion Questions
- If an employee of an organization breaches patient data, who is at fault – the employee or the organization?
- If a physician practice uses a web-based EMR, who should be responsible for ensuring that patient data is secure?

WEEK 15: April 27th - Final Presentations

WEEK 16: May 4th - Final Presentations

WEEK 18: Final Exam – Monday May 11th from 5:00 -7:00 pm
SUPPLEMENTAL READINGS


“2009 HIMSS Leadership Survey,” HIMSS, Summer 2007

“2007 Gartner Healthcare Provider Hype Cycles” August 2007


“Healthcare 2015: Win-Win or Lose-Lose,” *IBM Global Business Services White Paper*

“Six IT Decisions Your IT People Shouldn’t Make,” *Harvard Business Review*


“CIOs at the Crossroads,” CIO Insight, January 2008

“Intelligent Disobedience,” Computerworld, August 2004

Hospitals and Health Networks, www.hhnmag.com

Health Data Management, www.healthdatamanagement.org

Web Sites:

www.hospitalconnect.com  www.aha.org
www.cio.org  www.hhs.gov
www.cioinsight.com  www.healthcareitnews.com
www.himss.org  http://www.healthdatamanagement.com
www.ihi.org
VI. Withdrawal policy
Withdrawal after 2nd week and before final 3 weeks “permissible for serious and compelling reasons”. The student will be asked to substantiate their circumstance with official documentation.

VII. Attendance policy
Students are expected to attend classes regularly and arrive on time. Students should not miss classes except for valid reasons such as illness, accident or participation in officially approved University activities. Students are expected to notify their instructor in advance when they know they will have an excused absence. It is the student’s responsibility to arrange to make up any work missed. All unexcused absences will result in 1 point reduction in your attendance grade.

VIII. Students Requiring Accommodations for Special Needs
It is the student’s responsibility to notify the instructor of the need for accommodations during the first week of class.

IX. Cheating and plagiarism

The following is excerpted from the California State University, Long Beach Policy Statement 85-19, dated December 13, 1985.

It is the policy of the faculty and administration to deal effectively with the student who practices cheating or plagiarism. These acts are fundamentally destructive of the process of education and the confident evaluation of a student's mastery over a subject. A University maintains respect and functions successfully within the larger community when its reputation is built on honesty. By the same token, each student benefits in helping to maintain the integrity of the University. This policy, therefore, provides for a variety of faculty actions including those which may lead to the assignment of a failing grade for a course and for administrative actions which may lead to dismissal from the University. It is the intent to support the traditional values that students are on their honor to perform their academic duties in an ethical manner.

The following definitions of cheating and plagiarism shall apply to all work submitted by a student.

Plagiarism is defined as the act of using the ideas or work of another person or persons as if they were one's own, without giving credit to the source. Such an act is not plagiarism if it is ascertained that the ideas were arrived at through independent reasoning or logic or where the thought or idea is common knowledge.

Acknowledge of an original author or source must be made through appropriate references, i.e., quotation marks, footnotes, or commentary. Examples of plagiarism include, but are not limited to, the following: the submission of a work, either in part or in whole, completed by another; failure to give credit for ideas, statements, facts or conclusions with rightfully belong to another; in written work, failure to use quotation marks when quoting directly from another, whether it be a paragraph, a sentence, or even a part thereof; close and lengthy paraphrasing of another writing or paraphrasing should consult the instructor.

Students are cautioned that, in conducting their research, they should prepare their notes by (a) either quoting material exactly (using quotation marks) at the time they take notes from a source; or (b) departing completely from the language used in the source, putting the material into their own words. In this way, when the material is used in the paper or project, the student can avoid plagiarism resulting from verbatim use of notes. Both quoted and paraphrased materials must be given proper citations.

Cheating is defined as the act of obtaining or attempting to obtain or aiding another to obtain academic credit for work by the use of any dishonest, deceptive or fraudulent means. Examples of cheating during an examination would include, but not be limited to the following: copying, either in part or in wholes, from
another test or examination; discussion of answers or ideas relating to the answers on an examination or test unless such discussion is specifically authorized by the instructor; giving or receiving copies of an exam without the permission of the instructor; using or displaying notes; "cheat sheets," or other information or devices inappropriate to the prescribed test conditions, as when the test of competence includes a test of unassisted recall of information, skill, or procedure; allowing someone other than the officially enrolled student to represent the same. Also included are plagiarism as defined and altering or interfering with the grading procedures.

It is often appropriate for students to study together or to work in teams on projects. However, such students should be careful to avoid use of unauthorized assistance, and to avoid any implication of cheating, by such means as sitting apart from one another in examinations, presenting the work in a manner which clearly indicates the effort of each individual, or such other method as is appropriate to the particular course.

One or more of the following academic actions are available to the faculty member who finds a student has been cheating or plagiarizing.
   (a) Review -- no action.
   (b) An oral reprimand with emphasis on counseling toward prevention of further occurrences;
   (c) A requirement that the work be repeated;
   (d) Assignment of a score of zero (0) for the specific demonstration of competence, resulting in the proportional reduction of final course grade;
   (e) Assignment of a failing final grade;
   (f) Referral to the Office of Judicial Affairs for possible probation, suspension, or expulsion.

X. Additional information resources

For more information on the university syllabus policy please go to the Faculty Center for Professional Development website at: http://www.csulb.edu/divisions/aa/personnel/fcpd/.

The faculty handbook can also be found online at the following link:
http://www.csulb.edu/divisions/aa/personnel/handbook/

XI. Commitment to Inclusion

California State University, Long Beach is committed to maintaining an inclusive learning community that values diversity and fosters mutual respect. All students have the right to participate fully in university programs and activities free from discrimination, harassment, sexual violence, and retaliation. Students who believe they have been subjected to discrimination, harassment, sexual violence, or retaliation on the basis of a protected status such as age, disability, gender, gender identity/expression, sexual orientation, race, color, ethnicity, religion, national origin, veteran/veteran status or any other status protected by law, should contact the Office of Equity and Diversity at (562) 985-8256, University Student Union (USU) Suite 301, http://www.csulb.edu/depts/oed.