MET CS-581

Electronic Health Records Online

Fall 2013 1

Syllabus

Location:

Online

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Course Description

Electronic Health Records (EHRs) are application systems that automate the activities of healthcare clinicians including physicians, nurses, physician assistants, and healthcare administrative staff. Use of EHRs is increasing rapidly due to the systems' benefits and federal government programs to deploy EHRs. This increased use of EHRs has many challenges including complex data, high security requirements, integration to multiple application systems, a distributed user base, and broad impact on how these users work. This course will focus on real-world use and deployment of EHRs through readings, hands-on labs and case studies. Students will: (1) Learn the functionality of EHRs through hands-on labs; (2) Learn the technical infrastructure required for EHRs including distributed architecture, network and security design; (3) Understand how EHRs change healthcare delivery workflows and how to manage that change; and (4) Learn best-practices for deploying EHRs including project management, typical budgets, system selection and governmental requirements and funding.

Learning Objectives

- Learn the functionality of EHRs through lectures and hands-on labs
- Learn the technical infrastructure required for EHRs including distributed architecture, network and security design
- Understand how EHRs change healthcare delivery workflows and how to manage that change
- Learn best-practices for deploying EHRs including project management, typical budgets, system selection and governmental requirements and funding
- Collect a set of tools to use in EHR and other enterprise system deployment programs
- Present results of their work in a "real-world" fashion including class presentations and written assignments
- Introduce students to the applied, "real-world" deployment of enterprise application systems in general
- Encourage independent, analytical thinking about the challenges of deploying EHRs and how to address them

Course Outline

Module 1 - Introduction to Electronic Health Records

- Lecture 1 - Introduction to Electronic Health Records
- Lecture 2 - Healthcare Workflow and Business Process Re-engineering

Module 2 - EHRs and Healthcare

- Lecture 3 – Federal Government Meaningful Use Requirements
- Lecture 4 - EHR Functionality and Federal EHR Certification

Module 3 - EHR Technical Infrastructure

- Lecture 5 - EHR Technical Infrastructure Design
- Lecture 6 - EHR Infrastructure Performance Requirements

Module 4 - EHR Security and Interoperability

- Lecture 7 - EHR Security and HIPAA
- Lecture 8 - Interoperability and Health Information Exchanges

Module 5 - EHR Deployment

- Lecture 9 - EHR Deployment Project Management
- Lecture 10 - EHR System Selection

Module 6 - EHR Business

- Lecture 11 - EHR Deployment Project Budgets
- Lecture 12 - Government programs for EHRs, mHealth and eHealth

Module 7 - Prepare for and Take Final Exam

You will prepare for and take the proctored final exam.

The course will remain open two weeks after the final exam, so that you can continue discussions and ask any questions about database technology, your grades or the course. This is also a time when we enter into a dialog where we endeavor to learn from you how we can modify the course so that it better meets your needs.

Course Resources

Required Course book

Electronic Health Records Second Edition – A Guide for Clinicians and Administrators
By: Jerome Carter
Publisher: American College of Physicians ACP Press
ISBN-13: 978-1-930513-97-6
Copyright 2008

This textbook can be purchased from Barnes and Noble at Boston University and is also available in eBook format from the publisher.

Online Materials

The course makes extensive use of online reading material. URLs will be provided for those readings.

Personal Computer Software

Assignments will need to be completed using Microsoft Office tools - Word, Excel, and PowerPoint. You will also need access to diagramming software such as Microsoft Visio and to a project management software tool such as Microsoft Project. There are numerous freeware

project management packages. We recommend Gantt Project Tool at http://www.ganttproject.biz. Here is a CNET review of the product: http://download.cnet.com/GanttProject/3000-2076_4-10616093.html.

Microsoft DreamSpark Software Center

BU MET College is a member of the Microsoft DreamSpark, which allows faculty, graduate and undergraduate students currently enrolled in MET courses to obtain certain Microsoft products free of charge. Information on Microsoft DreamSpark is at: http://www.bu.edu/metit/hw-and-sw/msdn-academic-alliance-software-center/

Alternatives such as OpenOffice are acceptable, but the student bears the responsibility for completing the work such that it is compatible with MS Office 2010.

Instructor

Michael Levinger is an adjunct faculty member of Boston University's MET College. He created CS581 and has been teaching the course for the past several years. Michael is an information technology and healthcare senior executive and multi-time entrepreneur specializing in the successful creation, deployment and use of mission-critical software including Electronic Health Records and Health Information Technology. Mike is the founder, President and CEO of Digital Collaboration Solutions a provider of cloud-based eCollaboration, knowledge management and communication solutions for healthcare. Mike is a member of the Massachusetts eHealth Institute Ad Hoc workgroup on Health IT Workforce Development, the Healthcare Informatics Advisory Board for Benjamin Franklin Institute of Technology and an advisor to the University of Missouri Healthcare Management and Informatics Department. Previously, Mike was President and CEO of a Massachusetts-based Electronic Health Record consulting and systems integration company. Under Mike's leadership, the company helped numerous physician practices and healthcare delivery organizations implement EHR deployment programs.

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Course Structure

The course is organized as a sequence of six main weekly modules, plus a seventh module for the proctored final exam. Each of the six main modules includes assigned textbook readings; assigned readings from government and healthcare articles and websites; and online lectures in text, graphic, and video formats. Students have an opportunity each week to participate in synchronous Live Classroom and Live Office sessions where students interact with their faculty in real time; these live sessions are recorded for students who can't make the live sessions. Each of the first six modules includes graded homework assignments, graded discussions and a graded quiz.

Grading Policy

All students are expected to demonstrate an understanding of the class materials. To obtain an exceptional grade you have to exceed expectations in your assignments, quizzes, final exam and discussions.

Grade Weighting

There are a total of 19 graded items (6 discussions, 6 assignments, 6 quizzes and 1 final exam). Course letter grades are determined in a three-phase process designed to accurately determine how well each student has demonstrated that they understand and can use the subject matter of the course. The process begins when the professor and facilitators compute the weighted scores, using the weighting below. They examine not only the overall weighted score, but also each student's scores in each of the areas, and the trend of scores in each of these areas. The professor in conjunction with the facilitators then determines a letter grade for each student. The professor pays particular attention to the final exam score. He often reviews entire final exams to get a better understanding of how well each student understands each area. The professor then sends a spreadsheet containing all graded items for all students, and the proposed letter grades, to our facilitators, requesting final review and comment. After the professor receives feedback from the facilitators he finalizes the grades and uploads them to the University Information System, where students can see their grades via the Student Link.

All graded items are graded as a percentage of the maximum anticipated score; this traditional American grading system is sometimes termed "out of 100." Rarely a student may so exceed our expectations that they earn more than 100.

Grading Structure and Distribution

The following table summarizes the four kinds of graded items and the default percentage of grades determined by each of these kinds of graded items. Each of these graded items is explained below.

Overall Grading Percentages	
Assignments	35%
Discussions	15%
Quizzes	25%
Final Exam	25%

Assignments

In each of the six weekly modules you will have homework assignments. Feel free to do additional exercises of your own design and submit them to your facilitator for feedback. If you wish, you can ask your facilitator or professor for additional exercises tailored to your background and educational needs.

If for any reason you are unable to meet any assignment deadline, contact your facilitator, preferably in advance. Extensions may be granted under mitigating circumstances. Scores for assignments submitted late without extenuating circumstances will be penalized ten percent. Assignments submitted late near the end of the term may not be graded, because our facilitators are very busy grading term projects, resulting in zero scores for those assignments

If you are stuck, and just can't complete part of an assignment, then submit what you can complete to your facilitator, asking for help. Your facilitator may then choose to provide you with guidance in the areas where you are stuck, and return the partial assignment to you for further work and resubmission. Your facilitator will deduct from your score on the resubmission for any portion of the solution that your facilitator provided to help you. Your professor authorizes our facilitators to re-grade based on resubmissions. Whether a particular resubmission should be regraded is up to the judgment of the facilitator. Resubmissions may not be graded near the end of the term when facilitators are very busy grading the term projects. Resubmissions are intended to help struggling students who are stuck, and resubmissions are not intended for routine use.

Participation: Discussions and Class Contributions

Fifteen percent of your grade is based on your class contributions. This grade is derived from your participation in the graded discussions in each module. This is an important part of the learning process. Your discussion grade is based on how well your discussion postings contribute to your classmates' learning experience and understanding of the material. Your grade is not based on the number of posts but on their quality and on how they contribute to learning. Thus, a post which poses a question that opens a rich learning dialogue can be more valuable than an answer that ends the dialogue. Students who do exceptionally well in helping their classmates will occasionally receive bonus class contribution points.

Quizzes

There is one graded quiz in each of the first six modules. You will have access to the quiz at the beginning of the module. However you should not access the quiz until you have completed all learning activities for the module and are prepared to meet the objectives for that module. The quiz closes the second morning of the following module at 6:00 AM ET. The results for your quiz will be released as soon as possible after the quiz closes. When the quiz results are released, you will be able to see the questions, your answers, the correct answers, and tutorial material, just as in the review quizzes. Your professor releases the quiz results. Quizzes may be taken after the results have been released, with the professor's permission, but the scores on late quizzes do not count toward your grade.

The Final Exam

The final exam consists of a combination of 50 choose multiple, multiple choice, true/false, matching and possibly short written answer questions. The format of the questions is very similar to those in the weekly quizzes. You will have three (3) hours to complete the final exam; there should be plenty of time. The final exam is configured so that if you run out of time you will be notified, but you will still be permitted to continue taking the final. This feature is intended to permit you to complete the final in spite of technical difficulties. The system records the time for your submission of each question, so we can grade you fairly even if there are technical or other difficulties. Your final exam will be proctored, either at a testing center, using remote proctoring, or with a special proctoring arrangement. Your final exam will be offered in the last week of the course. The final exam will be released in the same way that the quizzes are released. You will be able to see the questions, your answers, the correct answers, and tutorial material for each question.

Grading Structure

Your assignments, discussions, quizzes, and final exam will be graded on a percentage basis. The following table summarizes typical correspondence of percentage grades and letter grades for individual graded items. The process and criteria for determining course letter grades is more complex than computing the weighted average grade and looking up the letter grade in the table below.

Letter Grade	Approximate Percentage Grade Range	When To Give
A	95–100	The student's submission is excellent and nearly without defect. The submission demonstrates mastery of the material.
A-	90 < 95	The student's submission is excellent with some minor defects. The submission demonstrates a solid grasp of the material.
B+	85 < 90	The student's submission is good with a few defects. The submission demonstrates a solid grasp of most but not all of the material.
B	80 < 85	The student's submission is above average with some defects. The submission demonstrates a solid grasp of some aspects of the material.
B-	75 < 80	The student's submission is approaching average. The submission demonstrates a grasp and understanding of some aspects of the material.
C+	70 < 75	The student's submission is average and has some moderate defects. The submission demonstrates a minimal grasp and understanding of the material.
C	65 < 70	The student's submission is average and has some major defects. The submission demonstrates a basic understanding of the material but nothing more.
C-	60 < 65	The student's submission is below average and has some major defects. The submission demonstrates a barebones understanding of the material but nothing more.
D	55 < 60	The student's submission is poor. Sections may be missing from the submission. The submission does not demonstrate an understanding of the material at even a basic level.
F	< 55	The student's submission is unacceptable. Sections may be missing from the submission. The submission does not demonstrate an understanding of the material in any fashion.

Note that C is the lowest grade that satisfies degree requirements in graduate courses and that you need to maintain a grade point average of 3.0 or better to graduate. For more information, see the MSCIS Academic Policies online manual.

The percentage ranges above are approximate. Your letter grade is determined by your professor as the best overall measure of how well you have demonstrated that you understand the material, taking into separate consideration your performance in the quizzes, assignments, discussions, and final exam. Additional grading criteria include any substantial difference in your performance on the proctored final exam and the general trend of your scores over the term. The actual grade ranges will be adjusted to reflect the difficulty of graded items. While there is no fixed absolute number of

grades in any one level it is important to note that high grades reflect an excellence in the understanding of class material and organization of thought. In addition, an important aspect of any class is the shared thoughts and insights of the class members. Grades will also reflect an individual's contributions to the class.

Minimal preparation is reading the material, and being able to summarize what it is about, what the major issues are, and some recommendations.

Superior preparation involves being able to (i) summarize the situation or problem presented by the material; (ii) recommend solutions; (iii) support your recommendation with data, relevant details, and analyses; and (iv) discuss innovative solutions, or why obvious solutions might be discounted.

Off-Syllabus Work - The course topic is part of a very dynamic industry. As such, there is much material that is not covered in the class. Students are encouraged to read and consider related material and issues that are beyond those defined in the syllabus to include in their work and in class discussions.

Timeliness

Because of the fast pace of this course, strict following of assessment and assignment deadlines is crucial. No work will be accepted after the deadlines. In case of an emergency, students are required to contact their facilitators BEFORE the deadline and discuss their situation. In the case of serious or emergency situations, or if, for any reason, you are unable to meet any assignment deadline, contact your Course Facilitator.