
INLS 725

INLS 725 Electronic Health Records (Online)

Course Description

The course is aimed at exposing students to Electronic Health Record (EHR) systems, with a strong emphasis on the role of EHR systems in healthcare operations.

In this class we will focus on EHR data standards with a strong emphasis on associated data management requirements, applications, and services. The course is aimed at data management specialists, data management administrators, and students interested in health data analytics.

Learning Objectives

- Understand the basic concepts of technological foundations of EHR systems
- Learn data management, architecture and information exchange platforms
- Gain practical experience with EHR tools and application
- Understand meaningful use of EHR system

Course Requirements

- Discussion participations – 40%
- 5 Virtual presentations – 30%
- Final Exam – 30%

Grading

Based on current UNC grading scales, the following grades and corresponding numeric ranges are applicable:

Grad Grade	Range	Definitions*
H	95-100	High Pass
P	80-94	Pass
L	79-79	Low Pass
F	69 or Below	Fail

*Definitions are from: <http://registrar.unc.edu/academic-services/grades/explanation-of-grading-system/>

Fall 2015
Online Class

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Required Textbook

Electronic Health Records: A Guide for Clinicians and Administrators.
Jerome H. Carter (Ed.), American College of Physicians; 2nd edition, 2008

Additional Recommended Book

- Hacking Healthcare. Trotter, F., & Uhlman, D. O'Reilly, 2011.
- Reinventing American Health Care. Emanuel, E. PublicAffairs, 2014.
- Health Care Information Systems. Wager, K. & Lee, Frances. Jossey-Bass, 2013.

Course Acknowledgements

The design, materials, and implementation of this online version of INLS 725 is the product of a collaborative effort of SILS instructors: Laura Marcial, Javed Mostafa, and myself.

Assignments & Assessments

Materials. All materials can be found in Sakai. The course syllabus, schedule, slides, and other resources will be there.

Videos & Slides. 10-15 min slides and videos every will be published on Tuesday morning, according to the syllabus. Once published, they will be available for you to study through the end of the semester.

Readings. A list of readings, organized in recommended order is provided for each module. Do not be overwhelmed by the length of some lists – most readings are only a few pages long and/or only select pages from each reading are required (details will be listed in each course module). Readings should be completed prior to the beginning of each week so you are prepared to engage in class discussion. Lists of optional readings are provided for most of the modules. The optional readings provide more in-depth exploration of topics of interest and/or background to help prepare short papers/presentations.

The list of readings is provided in the Resources section of the course website.

Discussion. We will be using the **discussion forum** as the main form of course interaction. You are expected to visit the course site at least **2-3 days out of each week** (the instructor will be monitoring the forum daily) to post your responses to discussion prompts and to offer thoughtful replies to your classmates' posts. We will use the forum for formal discussions of weekly readings, your individual assignments (see below) and to informally discuss any topics/issues that come up during the course. The course is short in duration, so your active engagement in forum discussions is the best way to get the most out of the course!

Five Virtual Presentations. The purpose of these assignments is to allow students to explore a topic of their choice in more detail for each module and to share the results with classmates. You are required to provide a short report in the form of a slide presentation (10 slides not including the title and references slides) on a topic relevant to each of the 5 course modules. A list of suggested topics will be provided in the Resources section of the course site but feel free to choose other topics of interest (pending instructor approval). The presentations should be based on scholarly information sources (make sure to include a proper list of references). Try to use non-textual materials in your presentation (online videos or examples, tables, charts, diagrams) as a way to synthesize and present the key ideas and themes. If some text is necessary, please limit it to very short paragraphs and bulleted lists. **Please include voice narration with your presentation.** All presentations will be posted on the course website for comments from other class participants. The author is expected to respond to any questions posted by classmates.

Final Exam. The purpose of the final exam is to assess the knowledge gained from the course. As such, it will be based on assigned readings and issues elaborated upon in class discussion. The exam which is essentially 'open book' will require your responses to a series of short essay questions. The time limit for the exam is approximately **3 hours**. The questions will require that you integrate and summarize what has been covered in the course. Pre-exam review suggestions will be provided.

Course Communication

Course announcements. Announcements will be posted on Sakai. Announcements may include information about the week's work, or other timely information.

Messages. I may use the message tool to send individual messages to you; I may also copy the message to your email address. You can also use the tool to send a message to me.

Email. Email is the best way to contact me. I try to reply to student emails within 48 hours, there are times that it may take me 2-3 days to reply.

Course Outlines

Module 1 – Introduction to EHR concepts and context (Class 1 – 3)

Topics

- Definition of an EHR
- Forces that shape EHR development and implementation
- EHR components and functionality
- The Legal and regulatory context for EHRs
- Implications of EHR for healthcare in the US

Class 1. Tuesday 8/18/15

Introduction to the class and distribution of the syllabus. Important dates, exam, and assignments described.

Material:

1. [Video & slides](#)

Class 2. Tuesday 8/25/15

Overview of EHR; platform, standards, applications, and evolution

Material:

1. [Video & slides](#)
2. Chapter 1. **Carter (2008), Electronic Health Records: A Guide for Clinicians and Administrators**
3. Staggers, N., Thompson, C.B. & Snyder-Halpern, R. (2001). History and trends in clinical information systems in the United States. *Journal of Nursing Scholarship*, 33 (1), 75-81

Class 3. Tuesday 9/1/15

Health data architectures, standards, and protocols.

Material:

1. Chapter 2&6. **Carter (2008), Electronic Health Records: A Guide for Clinicians and Administrators**
2. Tang P.H. (Ed). (2003). Key capabilities of an Electronic Health Record System. Washington, DC: National Academies Press
3. Goldschmidt, P.G. (2005). HIT and MIS: implications of health information technology and medical information systems. *Communications of the ACM*, 48(10), 69-74

- **Assignment 1 (Virtual Presentation):** By August 28, 2015, please select a topic and begin working on your module presentation. Presentations are due September 4, 2015, all comments and responses are due by September 8, 2015.

Module 2 – Supporting Technologies and Standards (Class 4 – 6)

Topics:

- Real-World EHR models
- Health Informatics Standards
- Databases in Healthcare

Class 4. Tuesday 9/8/15

EHR model and database in healthcare.

Material:

1. [Video & slides](#)
2. Readings: Cimino, J. (2000). From Data to Knowledge through Concept-Oriented Terminologies: Experience with Medical Entities Dictionary. J. Am Med Inform Assoc (7): 288-297.
3. Chapter 4. **Carter (2008)**

Class 5. Tuesday 9/15/15

Data modeling in basic and data warehousing contexts.

Material:

1. [Video & slides](#)
Chapter 4. **Carter (2008)**

Class 6. Tuesday 9/22/15

Data modeling in basic and data warehousing contexts. Usability

Material:

1. [Video & slides](#)
2. **Health IT usability.** <http://inspiredehrs.org/designing-for-clinicians/health-it-usability.php>

- **Assignment 2 (Virtual Presentation):** By September 18, 2015, please select a topic and begin working on your module presentation. Presentations are due September 25, 2015, all comments and responses are due by September 30, 2015.

[Module 3– EHR in clinical process, workflow \(Class 7 – 9\)](#)

Topics:

- Business Processes in Clinical Practices
- Understanding Clinical Processes
- Workflow/policy challenges in EHR implementation
- Change Management

Class 7. Tuesday 9/29/15

Data management. Architecture and information exchange platforms

Material:

1. [Video & slides](#)
2. Chapter 4. **Carter (2008)**
3. Sujansky, W.V., Overhage, J.M., Chang, S., Frohlich, J. & Faus, S.A. (2009). The Development of a highly constrained Health Level 7 implementation guide to facilitate electronic laboratory reporting to ambulatory electronic health record systems. *Journal of the American Medical Informatics Association*, 16(3), 285-290.
4. Lorenzi, N.M., and Riley, R.T (2000). Managing change: An overview. *Journal of the American Medical Informatics Association*, 7, 116-124

Class 8. Tuesday 10/6/15

Implementing EHR: coding, vocabularies, interfaces, XML, and APIs.

Material:

1. [Video & slides](#)
2. Readings: Chapter 6.

Class 9. Tuesday 10/13/15 (Fall Break Thursday & Friday)

Coding and interfacing (contd.). Clinical workflows and clinical processes.

Material:

1. [Video & slides](#)
2. Readings: Chapter 8.
3. Caleen, J.L., Braithwaite, J. & Westbrook, J.A. (2008). Contextual implementation model: A framework for assisting clinical information system implementations. *Journal of the American Medical Informatics Association*, 15(2), 255-262 (mainly diagram on p. 258)
4. OpenEMR Tutorials and Task (http://www.open-emr.org/wiki/index.php/Videos_and_Animations)

- **Assignment 3 (Virtual Presentation):** By October 9, 2015, please select a topic and begin working on your module presentation. Presentations are due October 14, 2015, all comments and responses are due by October 21, 2015.

[Module 4– EHR and Quality of Care; Clinical Decision Support \(Class 10 – 12\)](#)**Class 10. Tuesday 10/20/15**

Evidence-based care and quality improvement I

Material:

1. Chapter 10. **Carter (2008)**
2. Chassin MR, Galvin RW. The urgent need to improve health care quality. *Institute of Medicine National Roundtable on Health Care Quality. JAMA* 1998; 280: 1000–5 (just pp 102-103)
3. Chaudhry, B., Wang, J., Wu, S., et al. (2006). Systematic review: impact of health information technology on quality, efficiency, and costs of medical care. *Annals of Internal Medicine*, 144, 742-752

Class 11. Tuesday 10/27/15

Material:

1. [Video & slides](#)
2. Chapter 9. **Carter (2008)**
3. Readings: Goldzweig, C.L., Towfigh, A., Maglione, M. & Shekelle, G. (2009). Cost and benefits of health information technology: New trends from the literature. *Health Affairs*, 28(2), 282-293 (skim the paper, focus on discussion section on pp. 291- 292)
4. Buntin, M.B., Burke, M.F., Hoaglin, M.C. & Blumenthal, D. (2011). The benefits of health information technology: A review of the recent literature shows predominantly positive results. *Health Affairs*, 30(3), 464-471. (skim introductory sections, read the Results, pay special attention to Discussion)

Class 12. Tuesday 11/3/15

Clinical decision support. Usability of CDS systems.

Material:

1. [Video & slides](#)
2. Chapter 9. **Carter (2008)**
3. Readings: Roukema, J., Styerbert, E.W., van der Lei, J. & Moll, H.A. (2008). Randomized trial of a clinical decision support system: Impact on the management of children with fever without apparent source. *Journal of the American Medical Informatics Association*, 15 (1), 107-114

- **Assignment 4 (Virtual Presentation):** By October 30, 2015, please select a topic and begin working on your module presentation. Presentations are due November 6, 2015, all comments and responses are due by November 11, 2015.

[Module 5– EHR Implementation/Evaluation and Meaningful Use \(Class 13 – 15\)](#)

Topics:

- Defining Meaningful Use
- Evaluation of EHR Features

Class 13. Tuesday 11/10/15

Implementing EHR and evaluating systems. Data Governance. Meaningful use I.

Material:

1. Reading: Chapters 16 and 17
2. Blumenthal, D. & Tavenner, M. (2010). The “meaningful use” regulation for electronic health records. *The New England Journal of Medicine*, 363(6), 501–504

Class 14. Tuesday 11/17/15 & 11/24/15

Data Governance & Meaningful use II.

Material:

1. [Video & slides](#)

Class 15. Tuesday 12/1/15

EHR regulations, privacy, and security

Material:

1. [Video & slides](#)
 2. Reading: Chapters 12 and 13
 3. Davidson, S.M. & Heineke, J. (2007). Toward an effective strategy for the diffusion and use of clinical information systems. *Journal of the American Medical Informatics Association*, 14(3), 361–367
 4. Halamka, J.D. (2010). Making the most of federal health information technology regulations. *Health Affairs*, 29 (4), 596–600
- **Assignment 5 (Virtual Presentation):** By November 18, 2015, please select a topic and begin working on your module presentation. Presentations are due November 24, 2015, all comments and responses are due by December 2, 2015.

Final Exam

Exams will take place on December 4, 2015 from noon - 3PM EST. Please contact the instructor if you need to schedule an alternate three hour window to complete your final exam.

Policies on Academic Integrity and UNC Honor Code

Chapel Hill has had a student-administered honor system and judicial system for over 100 years. Because academic honesty and the development and nurturing of trust and trustworthiness are important to all of us as individuals, and are encouraged and promoted by the honor system, this is a most significant University tradition. More information is available at <http://studentconduct.unc.edu/honorsystem>