Course Syllabus

I. Course Information

1. Course Name: Health Data and Electronic Health Records
2. Course Number: RHIN-115-DL
3. Course Start & End Dates; Class Meeting Times:
   This course is offered via distance learning. For schedule and participation refer to the course information by visiting http://latte.brandeis.edu

<table>
<thead>
<tr>
<th>Week</th>
<th>Week Start</th>
<th>Initial Posts Due</th>
<th>Week End</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>10/11/2017</td>
<td>10/14/2017</td>
<td>10/17/2017</td>
<td></td>
</tr>
<tr>
<td>Week 2</td>
<td>10/18/2017</td>
<td>10/21/2017</td>
<td>10/24/2017</td>
<td>Library Exercise Due</td>
</tr>
<tr>
<td>Week 3</td>
<td>10/25/2017</td>
<td>10/28/2017</td>
<td>10/31/2017</td>
<td>Case Study 1 Begins</td>
</tr>
<tr>
<td>Week 4</td>
<td>11/1/2017</td>
<td>11/4/2017</td>
<td>11/7/2017</td>
<td>Case Study 1 Due</td>
</tr>
<tr>
<td>Week 5</td>
<td>11/8/2017</td>
<td>11/11/2017</td>
<td>11/14/2017</td>
<td></td>
</tr>
<tr>
<td>Week 6</td>
<td>11/15/2017</td>
<td>11/18/2017</td>
<td>11/21/2017</td>
<td>Case Study 2 Begins</td>
</tr>
<tr>
<td>Week 7</td>
<td>11/22/2017</td>
<td>11/25/2017</td>
<td>11/28/2017</td>
<td>Case Study 2 Due</td>
</tr>
<tr>
<td>Week 8</td>
<td>11/29/2017</td>
<td>12/2/2017</td>
<td>12/5/2017</td>
<td></td>
</tr>
<tr>
<td>Week 9</td>
<td>12/6/2017</td>
<td>12/9/2017</td>
<td>12/12/2017</td>
<td>Final Begins</td>
</tr>
<tr>
<td>Week 10</td>
<td>12/13/2017</td>
<td>12/16/2017</td>
<td>12/19/2017</td>
<td>Final Due</td>
</tr>
</tbody>
</table>

4. Instructor’s Name and Contact Information

- Instructor: Dan Flanagan
  Email: danflan@brandeis.edu
  Phone: 781-405-5647 (feel free to call any day before 10 pm)
  Office Hours: Monday nights 8PM – 10PM EST

5. Document Overview

This syllabus contains all relevant information about the course: its objectives and outcomes, the grading criteria, the texts and other materials of instruction, and of weekly topics, outcomes, assignments, and due dates.

Consider this your roadmap for the course. Please read through the syllabus carefully and feel free to share any questions that you may have. Please print a copy of this syllabus for reference.
6. Course Description

This course is designed to provide current and aspiring health/medical IT professionals with an understanding of the challenges of collecting and maintaining electronic health data. The course focuses on issues specific to health data and the systems implemented to collect and store it. This will include an overview of various types of Hospital systems; methods used to interface between systems; and operations issues typical of hospital systems. The course will also include a study of controlled medical vocabularies typically used to define various types of health data as well as a survey of existing and evolving government driven standards and regulations.

- Relevant Programs
  - MS in Health/Medical Informatics
  - MS in Information Technology Management

- Prerequisites
  - RHIN-110 Perspectives on Health and Medical Information Systems or permission of instructor

7. Materials of Instruction

a. Required Text


b. Online Course Content

- Students will be provided with copies of additional course materials during the semester.

- DL Courses (LATTE): This section of the course will be conducted completely online using Brandeis’ LATTE site, available at http://latte.brandeis.edu. The site contains the course syllabus, assignments, discussion forums, links/resources to course-related professional organizations and sites, and weekly checklists, objectives, outcomes, topic notes, self-tests, and discussion questions. Access information is emailed to enrolled students before the start of the course. To begin participating in the course, review the Week 1 Checklist found in the Week 1 block.

8. Course Objectives/Outcomes

This course is intended to provide students with an understanding of:

- Common types of healthcare systems and health data.
- Typical data flow in healthcare environments.
- Methods of communications between divergent health data systems.
- Specific regulations and standards around the security and use of health data.
- Data quality issues in healthcare environments.
- Implementation hurdles to EHR systems.
- The use of controlled medical vocabularies for data standardization.

At the conclusion of this course students will have the ability to:
• Define a list of data elements that are desirable for inclusion in an electronic health record.
• Diagram the data flow in existing healthcare environments.
• Identify the most appropriate interface methods between both internal and external health information systems.
• Develop an understanding of current standards in health and medical informatics.
• Identify key technical considerations and hurdles in the implementation of an EHR.
• Evaluate current and proposed regulations impacting electronic health data.
• Determine when it is appropriate to utilize a controlled medical vocabulary (CMV) and which CMV is appropriate for a given situation.

9. Course Grading Criteria

<table>
<thead>
<tr>
<th>Percent</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 % (DL)</td>
<td>Discussions/On-line participation:</td>
</tr>
<tr>
<td></td>
<td>• Each week, respond to both discussion questions by Saturday and post at least 2 other substantive messages by Tuesday.</td>
</tr>
<tr>
<td></td>
<td>• If the week includes a mini case study then at least one of the substantive replies must be to this question.</td>
</tr>
<tr>
<td>10%</td>
<td>Library Exercise</td>
</tr>
<tr>
<td>15%</td>
<td>Case Study 1</td>
</tr>
<tr>
<td>15%</td>
<td>Case Study 2</td>
</tr>
<tr>
<td>20%</td>
<td>Final Exam</td>
</tr>
</tbody>
</table>

1. Online Participation (40%, 4% per week)

To earn full credit for the Participation component of the grade, participants will be expected to complete the following during weeks 1 through 10 of the course:

1. **Respond to 2 Discussion Topics each week;** respond to both the weekly discussion questions by Saturday. These responses should consist of approximately 300 - 350 words and include your own insights into the topics. Students are encouraged to use professional experience, assigned weekly reading, and outside research to formulate their responses. Any relevant sources used within the post should be cited appropriately.

2. **Post (at least) 2 other substantive messages to the Discussions each week** by Tuesday. At least one of these posts must be posted to the weekly mini case study if there is one for the given week. Other posts may be responses to the messages of others or they may be questions or comments about the topics covered during the week. The assumption is that you will read through the posts of your classmates to enhance your learning; respond to those of your choice, based upon your own experiences and insights.

3. **Post on three separate calendar days each week;** Students must post on a minimum of three separate days of the week, i.e. Thursday, Saturday, and Monday. Again, this is often overlooked so plan accordingly on the weeks where life has you busy!

2. Participation Evaluation

Points may be earned for original responses and substantive replies based on the following criteria:
Original Responses (50%)

Evaluation Criteria:

- Includes your own insights into the topics, sharing your professional experiences as appropriate and your own conclusions
- Includes references to weekly required readings and/or other external sources, cited appropriately
- Answers the question posed completely
- Consists of at least 300-350 words
- Well written, with no spelling or grammatical errors

Substantive Replies (30%)

Evaluation Criteria:

- Substantive (beyond an "I agree" post) with:
  - Follow-on points from your related experiences or from the readings
  - Follow-up questions of others to extend the conversation (encouraged)
  - Consists of at least 200 words

Other (20%)

- Posting on three separate days each week
- Grammar/spelling/format
- Sources noted appropriately
- On time, 10% will be deducted for each day a post is late, posts more than 2 days late will not receive any credit.
II. Weekly Information

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Health and Medical Data</th>
</tr>
</thead>
</table>
| **Outcomes** | • Identify the different types of data typically found in a healthcare setting  
• Define the typical sources of health data  
• Explain barriers to electronically capturing data  
• Describe some of the typical uses for health data |
| **Readings** | • Week 1 notes  
• HCIS Chapter 1  
• Health Care Technology: A History of Clinical Care Innovation  
• Physician Adoption of Electronic Health Records Systems: United States, 2011 |
| **Assignments / Assessments/ Self-Assessments** | • None |

<table>
<thead>
<tr>
<th>Week 2</th>
<th>Computerized Systems in Healthcare</th>
</tr>
</thead>
</table>
| **Outcomes** | • Describe the purpose of the typical administrative and clinical systems in a healthcare environment  
• Identify the required operational elements needed to support healthcare systems  
• Diagram data flows between systems in a typical healthcare environment  
• Differentiate between monolithic and best of breed approaches to overall hospital system architecture |
| **Readings** | • Week 2 notes  
• HCIS Chapter 5  
• HCIS Case Study 3 |
| **Assignments / Assessments/ Self-Assessments** | • Library Exercise |

<table>
<thead>
<tr>
<th>Week 3</th>
<th>Electronic Health Records (EHR) – Part 1</th>
</tr>
</thead>
</table>
| **Outcomes** | • Define the basic components of an EHR  
• Review the history of the development of the EHR  
• Identify the different users of an EHR  
• List advantages of an EHR for clinical, administrative, and public policy purposes |
| **Readings** | • Week 3 notes  
• HCIS Appendix B |
| Assignments / Assessments/ Self-Assessments | A Cost-Benefit Analysis of Electronic Medical Records in Primary Care

Case Study 10 |
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic Health Records (EHR) – Part 2</td>
</tr>
</tbody>
</table>
| Outcomes | Define the data elements typically included in an EHR
- Examine the business case for implementation of an EHR
- Identify reasons that adoption of EHRs has been slow |
| Readings | Week 4 Notes
HCIS Chapter 17
Adoption of Electronic Health Record Systems Among U.S. Non-Federal Acute Care Hospitals 2008-2012
Computer Physician Order Entry: Benefits, Costs, and Issues; Kuperman, Giliad J; Gibson, Richard F. Annals of Internal Medicine
HCIS Case Study 15 |
| Assignments / Assessments/ Self-Assessments | Case Study Assignment 1 Begins |

---

| Assignments / Assessments/ Self-Assessments | Case Study Assignment 1 Due |
| --- |
| EHR Implementation |
| Outcomes | Define the typical project lifecycle for an EHR implementation
- Identify key risks in EHR projects and possible mitigation plans
- Identify stakeholders in an EHR project and their typical key concerns |
| Readings | Week 5 notes
HCIS Chapters 8, 16 |
| Assignments / Assessments/ Self-Assessments | None |

---

| Assignments / Assessments/ Self-Assessments | None |
| --- |
| Interfaces |
| Outcomes | Describe the current interfacing methods used by healthcare systems
- Identify key issues that make interfacing difficult
- Understand the basic purpose and design of HL7
- Diagram the basic architecture of a typical hospital interface system |
| Readings | Week 6 notes
20 Minute HL7 V 2.x Primer |
<table>
<thead>
<tr>
<th>Week 7</th>
<th>Regulatory/Governmental Perspectives on Healthcare Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcomes</td>
<td></td>
</tr>
</tbody>
</table>
| • Define “meaningful use” and how it impacts funding for EHR implementations  
• Review external influences on typical hospital IT agendas  
• Identify resources for monitoring regulatory changes |
| Readings |  |
| • Week 7 notes  
• HCIS Chapter 3  
• HCIS Case Study 14 |
| Assignments / Assessments / Self-Assessments |  |
| • Case Study Assignment 2 Begins |

<table>
<thead>
<tr>
<th>Week 8</th>
<th>Healthcare Data Standards/Organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcomes</td>
<td></td>
</tr>
</tbody>
</table>
| • Identify current and evolving standards in healthcare data  
• Review healthcare IT certification programs  
• Develop a list of industry organizations concerned with healthcare data and the basic purpose of each |
| Readings |  |
| • Week 8 notes  
• Interoperability: Supplying the Building Blocks for a Patient-centered EHR  
• [www.hl7.org](http://www.hl7.org) |
| Assignments / Assessments / Self-Assessments |  |
| • None |

<table>
<thead>
<tr>
<th>Week 9</th>
<th>Controlled Medical Vocabularies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcomes</td>
<td></td>
</tr>
</tbody>
</table>
| • Describe the general purpose for using a CMV  
• Identify common CMVs currently in use for the collection of healthcare data  
• Identify issues that make implementation of CMVs difficult |
| Readings |  |
| • Week 9 notes  
• Medical terminologies, nomenclatures, coding and classification systems: an introduction  
• Healthcare Terminologies and Classifications: An Action Agenda for the United States (read pages 1-10 and skim the tables in the back listing different coding systems) |
Assignments / Assessments / Self-Assessments

<table>
<thead>
<tr>
<th>Week 10</th>
<th>Use of EHR data</th>
</tr>
</thead>
</table>
| Outcomes | • Describe typical uses for EHR data from a clinical, administrative, and public policy perspective  
• Define what is appropriate use of EHR data for research  
• Assess different approaches to the evaluation and improvement of the quality of EHR data |
| Readings | • Week 10 notes  
• Secondary Uses of Electronic Health Record Data in Life Sciences |
| Assignments / Assessments / Self-Assessments | • Final Exam Due |

III. Course Policies and Procedures

1. Late Policies
Course weeks run Wednesday to Wednesday at 12:01AM. Submit homework by midnight Tuesday in the week it is due. The assignment dropbox in LATTE will reflect a grace period during which you may submit homework without penalty, generally this will be until 6AM on Wednesday.
Late homework will lose 5 points for every day it is late. For example:
- Homework due Tuesday at midnight.
- Homework submitted by 6AM Wednesday – no penalty
- Homework submitted by midnight Wednesday – lose 5 points
- Homework submitted by midnight Thursday – lose 10 points
Homework submitted more than one week late will not earn credit, unless you contact the instructor before the homework is due.

Please remember that course deadlines reflect the Eastern time zone, which might not be the same as your local time zone.

2. Grading Standards
   - Work expectations

Assignments must be your original work, with sources properly cited. Information on how to cite sources correctly is posted in our LATTE course site.

All assignment/work submissions must be made in Microsoft DOC or DOCX formats.

   • How points and percentages equate to grades

<table>
<thead>
<tr>
<th>Points Range</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>94-100 points</td>
<td>A</td>
</tr>
<tr>
<td>90-93 points</td>
<td>A-</td>
</tr>
<tr>
<td>87-89 points</td>
<td>B+</td>
</tr>
<tr>
<td>84-87 points</td>
<td>B</td>
</tr>
</tbody>
</table>
80-83 points  B-
77-79 points  C+
74-77 points  C
70-73 points  C-

Grades below B- will not earn credit toward a graduate program.

Often, students will receive tuition reimbursement from their employers that varies based on final grades. The instructors have no control over these policies and cannot take them into account when determining grades. You are responsible for knowing about your employer’s reimbursement policy.

3. Feedback
I will do my best to provide feedback on assignments within 2 weeks of the due dates. If I am delayed, I will post in LATTE so you will know what to expect.
I will provide feedback on discussion participation within a week. I will check in with the class at least every other day during the week.

4. Confidentiality
The LATTE course site is available only to students registered in the course. However, the course is also visited by administrators, LTS staff, and sometimes faculty who are training to be DL instructors. Staff who have access to the course site must agree to specific nondisclosure requirements. In some cases, you will be notified before visitors enter the course; in other situations (such as for emergency maintenance of LATTE), you will not be notified.

Topics discussed in class are intended to remain private among class members. However, this is not the same as a formal nondisclosure agreement. Please do not share information that is proprietary to your employer or someone else.

The materials and messages we post in LATTE become long-term academic records of the University. They will be used for program quality assurance, and as evidence for reaccreditation.

5. Class Schedule and Cancellations
DL courses generally are not cancelled due to inclement weather, but course operations might be delayed due to serious problems with LATTE. We will post messages if course deadlines need to be adjusted.

IV. University and Division of Graduate Professional Studies Standards

Please review the policies and procedures of Graduate Professional Studies, found at http://www.brandeis.edu/gps/students/studentresources/policiesprocedures/index.html. We would like to highlight the following.

Learning Disabilities

If you are a student with a documented disability on record at Brandeis University and wish to have a reasonable accommodation made for you in this course, please contact me immediately.

Academic Honesty and Student Integrity
Academic honesty and student integrity are of fundamental importance at Brandeis University and we want students to understand this clearly at the start of the term. As stated in the Brandeis Rights and Responsibilities handbook, “Every member of the University Community is expected to maintain the highest standards of academic honesty. A student shall not receive credit for work that is not the product of the student’s own effort. A student’s name on any written exercise constitutes a statement that the work is the result of the student’s own thought and study, stated in the student’s own words, and produced without the assistance of others, except in quotes, footnotes or references with appropriate acknowledgement of the source.” In particular, students must be aware that material (including ideas, phrases, sentences, etc.) taken from the Internet and other sources MUST be appropriately cited if quoted, and footnoted in any written work turned in for this, or any, Brandeis class. Also, students will not be allowed to collaborate on work except by the specific permission of the instructor. Failure to cite resources properly may result in a referral being made to the Office of Student Development and Judicial Education. The outcome of this action may involve academic and disciplinary sanctions, which could include (but are not limited to) such penalties as receiving no credit for the assignment in question, receiving no credit for the related course, or suspension or dismissal from the University.

Further information regarding academic integrity may be found in the following publications: "In Pursuit of Excellence - A Guide to Academic Integrity for the Brandeis Community", "(Students') Rights and Responsibilities Handbook" AND "Graduate Professional Studies Student Handbook". You should read these publications, which can be accessed from the Graduate Professional Studies Web site. A student that is in doubt about standards of Academic honesty (regarding plagiarism, multiple submissions of written work, unacknowledged or unauthorized collaborative effort, false citation or false data) should consult either the course instructor or other staff of the Rabb School Graduate Professional Studies.

University Caveat

The above schedule, content, and procedures in this course are subject to change in the event of extenuating circumstances.