UNIVERSITY OF KENTUCKY
COLLEGE OF COMMUNICATION AND INFORMATION
SCHOOL OF LIBRARY AND INFORMATION SCIENCE
& COLLEGE OF PUBLIC HEALTH
DIVISION OF BIOMEDICAL INFORMATICS

Last Update: January 13, 2015

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Course Syllabus
LIS/CJT 539 (SEC 201)
Introduction to Medical Informatics
Spring 2015

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Online Blackboard Class: No Classroom meetings are required (https://elearning.uky.edu/)
Online course material posting date and time: Every Wednesdays by Midnight

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Contact information

Instructor:	Sujin Kim, Ph.D./Associate Professor
	230G, Multidisciplinary Science Building (Speed Sort: 0082)
	725 Rose Street, Division of Biomedical Informatics,
	Department of Biostatistics, College of Public Health
Telephone:	(+1) 859-218-0110
E-mail:	sujinkim@uky.edu [Preferred method of contact]
Office Hours:	Tuesdays between 3:30-5:30p [Walk-in] or Appointment via email
AdobeConnect :	**http://connect.uky.edu/lis539/**

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Course description

This course is designed to introduce the interdisciplinary field of medical informatics to health information professionals. Medical Informatics is a developing field that essentially seeks to apply information and computing technologies to improve all aspects of healthcare, including patient care, research, and education. During the semester we will explore a number of topics central to understanding the field, including: the nature of biomedical information, the electronic medical record, the role of information and computing technologies to support clinical decision making, healthcare and informatics standards, information retrieval, system analysis and technology assessment, and essential issues of information technology in medical education and medical ethics. By the end of this Web-based course, students are expected to be able to understand broad aspects of the field and can use this as a foundation for further education, training, and work in various types of health information professions.

Course rationale:

Recent advances in information technology and computational methods are transforming biomedical and health research, practice, and service by introducing new digital methodologies that dramatically change the kinds of healthcare issues practitioners can ask and answer. However, healthcare professionals face real challenges to accommodate advancing technology in their practice of medicine. At the same time, these new methodologies are absolutely necessary to cope with the increasing availability of "big data", whether genomic, phenotypic or population-based. Practitioners in healthcare often feel that they are overwhelmed about not only new technologies but also "big data" that they are not ready for use at work. Bridging knowledge gaps between advancing technologies for use in healthcare and understanding people in healthcare is a critical role of "informationist" who will drive these important challenges. With this context, this course content is designed to meet the health informatics learning objectives for healthcare professionals whose work is extensively involved in work with health information in various settings in medicine.

Course prerequisites
- Not Required

Course objectives
- Describe trends and best practices in informatics for the organization of biomedical and health information.
- Develop protocols utilizing management of information using computer technology.
- Describe the effects of technology on medical research, education, and patient care.
- Describe the essential functions of the electronic health record (EHR) and the barriers to secondary use of EHR data for research.
- Explain the role that health information technology standards have on the interoperability of clinical systems, including health IT messaging.
- Access patient information using quality checks via electronic clinical data warehouse.
- Retrieve medical knowledge through literature searches using advanced electronic techniques.
- Develop understanding of pros and cons of evidence-based medicine and evaluate different levels of evidences for use in clinical practice guideline.
- Discuss major informatics application areas such as direct patient care informatics and support service informatics.
- Discuss the role of bioinformatics in the study design and analyses of high dimensional data in areas, such as genotypic and phenotypic genomics.

Public Health Competencies for Statistics and Informatics
(Note: this statement is required for CPH students.)

- **8.** Apply basic informatics techniques with vital statistics and public health records in the description of public health characteristics and in public health research and evaluation.
- **G. 10.** Appreciate the importance of working collaboratively with diverse communities and constituencies (e.g. researchers, practitioners, agencies and organizations).
- **K. 3.** Discuss the influences of social, organizational and individual factors on the use of information technology by end users.
- **K. 6.** Collaborate with communication and informatics specialists in the process of design, implementation, and evaluation of public health programs.
- **K. 8.** Use information technology to access, evaluate, and interpret public health data.
- **K. 9.** Use informatics methods and resources as strategic tools to promote public health.
- **K. 10.** Use informatics and communication methods to advocate for community public health programs and policies.

Student learning outcomes:
Upon completion of this course, the learner will:
- Define biomedical informatics and its relationship to related fields, such as biomedicine and computer science.
- Describe the opportunities and challenges of using electronic health record for translational and clinical research
- Demonstrate the use open source tools to indexing and retrieve documents,
- Describe common medical terminologies, their importance in biomedicine and the use of biomedical information;
- Demonstrate proficient use of biomedical literature databases to retrieve relevant articles in a domain of interest, and
- Describe computational tools and resources genomic and phenotypic research.

Textbooks
- Robert E Hoyt, Nora Bailey, Ann Yoshihashi. *Health Informatics: Practical Guide for Healthcare and Information Technology Professionals (Fifth Edition).* (January, 2014). Publisher: lulu.com. (Ebook ISBN 978-0-9887529-2-4; Paperback ISBN 978-1-304-79110-8)

Communications:
(Reminder! Any official announcements will be posted on Blackboard Announcement page).

I can communicate with students between classes in several ways.
- Most frequently asked questions about homework and material availability will be posted to the appropriate Discussion Board. A *Course Q&A* section of the Discussion Board has been created for students to ask each other questions regarding the course in general. Often, simple problems can be resolved by utilizing this mechanism. Professionals constantly interact and collaborate with each other online. This is one place where students can share the expertise or experience they have with the rest of the class.
- There is *Class Café* in the Discussion Board for your free topic postings that are not relevant to the class topics. Please keep your online posting etiquettes when postings. You are an adult and well-educate individual who will become an "informationist" leading digital world with good manners.
- For personal matters, students can directly communicate with me through email at sujinkim@uky.edu. Given that I have other research and service related duties, please understand that it may take up to 48 hours to respond to some emails, although I will try to respond to most before that. If several students have emailed similar concerns, I may try to address these with one email to the entire class.
- Students can communicate with me during office hours (Tuesdays, between 3:30 p.m. and 5:30 p.m.) or by appointment. My office is located in 230G, Multidisciplinary Science Building, 725 Rose Street). You can also reach me at 859-218-0110. However, emailing is better than telephone contact.
- Synchronous conversation by telephone or private online chat through Blackboard *during my office hours* (or by appointment) is also available, if needed. I plan to open AdobeConnect session during the office hours within a couple of weeks. Any of these sessions may be recorded.

Blackboard Course Homepage
The Blackboard course page is a main tool for this class and you will be required to maintain a stable Internet connection to keep up with the all the relevant course materials and activities. Students should be aware that Blackboard keeps records of the dates and times they use various sections of the class page. The following information about course folders is to give you a general understanding of the individual course folder. Please consult with me or UK Blackboard Student Help and Support available at http://wiki.uky.edu/blackboard/Wiki%20Pages/Bb9%20Student%20Menu.aspx

Announcements
These appear first whenever the student logs into the class site. Important and official announcements may appear at any time during the course and students should log in at least every other day. As a complementary way to reach you, the announcement messages will be sent to you via the email address which you are registered with Blackboard. It is noted that the Blackboard emailing service has unexpected problems from time to time. Therefore, the official announcements will be posted in the Blackboard Announcement page.

About this course
This is where you find a guideline to the course. You can find a general overview of the class,

Blackboard structure, etc.
Syllabus
One can find course syllabus and the course related materials here. *(Note: If any updates, a version info and modified date will be noted.)*

Faculty Information
This link includes my contact information. My personal homepage is also linked for your reference about my teaching, research, and project details.

Course Contents
This section of the course site contains documents and folders of lecture slides, readings, web links, and other materials. Lecture notes/slides for each week will be provided either in Microsoft PowerPoint slides (MHTML) format or in PDF format for your convenience. Some of the lecture slides will contain voice-recorded PPTX files.

Assignments
This link will provide you assignment instructions and links to Assignment Drop folder. Due dates are given in the Course Calendar pages in the syllabus. The individual links are for you to deposit all of your assignments. Your assignments MUST have your name in both filename and the document itself (preferably in the header or footer), if you want full credit for your work. For instance, one can see that a file named SujinKimExercise1.docx is a student, Sujin Kim's exercise 1. I have no idea who turns in an assignment file labeled "Assignment 1.docx".

Discussions
Weekly discussion topics will be posted based on each week's topic. Please follow the instruction given in the topic description. (Note: Your discussion grading will be based on your active participation.)

MyGrades
Under the link to Tools, you can see **My Grades** where I will post your grades. Note that each assignment is weighted. For example, if an assignment is weighted at 10%, it will contribute 10 points to your final grade if you get 100% of it right, and 9 points if you get 90%, etc. You may want to wait to receive a total grade for an individual assignment until you complete each assignment category. The User Manual is very important. Please use it.

Course requirements and learner evaluation
Course grades will be based upon evaluation of the following activities:
- Practical Exercises (30 points)
- Class Participation and Discussion (20 points)
- Learning log and evaluation (10 points)
- Term Project (40 points)
(Note: No midterm and final exams will be given in this class.)
The following information is a summary of what you are expected to do for the given assignments. The details will be posted in the Blackboard course page in Assignment folder at least two weeks prior to due date.

Practical Exercises (30 points) – Both students
Five practical exercises will be given to sharpen the knowledge and skills that you have learned in the class lessons. Exercise guidelines will be distributed at least two weeks prior to the class.

Discussion/Participation (20 points) – Both students

10 weekly discussion topics will be posted on the Blackboard Discussion page, and active participation is required. You are to participate weekly in the Discussion board by answering to the given topics or replying to the given topic.

Learning logs and Evaluation Essay (10 points) – Both students
You are to include an overall review of your learning experience twice a semester (dates are given in the course calendar below). For the learning evaluation essay part, the act of stepping outside yourself and examining your thoughts and your work is a valuable habit to cultivate as you prepare yourself for life-long learning. I want you to reflect on your learning during the semester. At minimum, your essay should be two double-spaced pages (no more than 1000 words). You will be given an Assignment Drop link in Blackboard's Assignment folder.

Term Project (40 points) – Graduate Only
Each person will be assigned to further investigate on one of the class topics. Your main job is to create a resource link using one of social media technologies (such as Wiki, blog, personal webpage, etc.) that contains a systematically organized collection of resources for the assigned topic. Your topic should be approved by me, and I will post more detailed instruction about this project by the first week of March.

Weekly reading summary (40 points) – Undergraduate Only

Undergraduate students are required to summarize your readings assigned for each week. The length of the summary is limited to 1000 words per week. There are two dues for the summaries to be turned (check dues in your course calendar).Your reading summaries should reflect your learning from your readings. The readings include both textbook chapters and video clips assigned.

Points	Letter grade
100-90	A
89-80	B
79-70	C
0-69	F

Mid-term grade:
Mid-term grades will be posted in myUK by the deadline established in the Academic Calendar (http://www.uky.edu/Registrar/AcademicCalendar.htm). For those who are undergraduate students, your mid-term grading will be entered by March13, 2015.

Final grade:
Final grade will be posted in myUK by May 13, 2015.

Instructor expectations
1. I expect you to log into Blackboard course homepage to access course announcement, course information, assignment submission, and communication with your fellow classmates on a regular basis (at least three times a week).
2. The Blackboard class components are highly interrelated; missing a class lesson will detract from the learning potential of subsequent sessions.
3. I expect you to be prepared to begin work at the scheduled starting time for each session. Every Wednesdays, you will be notified a new posting for individual lecture notes which will summarize each week's lesson. I expect you to review the lecture notes to prepare your given class activities.
4. Reading a textbook chapter and recommended readings for further studies will prepare you to participate in the assigned class activities such as exercises, discussion, and learning logs and evaluation.

5. I expect you to actively participate in the discussions. This is not the type of class where you can sit back and read online postings.
6. I expect you to submit papers using proper English grammar, syntax, and spelling. You are encouraged to use spell check and grammar check prior to submitting your written work. The UK Writing Center is available to anyone who may need assistance. Grammar, syntax, and spelling will account for 10% of the grade for written work.
7. I expect (and encourage) you to provide honest and timely feedback regarding the content and process of this course throughout the semester.
8. I expect you to share in the responsibility for making this course an enjoyable and beneficial learning experience.
9. This is a graduate-level course that requires you to study at least *9 hours a week for three-credit course* like this one. You may need less time or more time, but be prepared for the fact that some weeks may be busier than others.

Academic honesty
Academic honesty is highly valued at the University. You must always submit work that represents your original words or ideas. If any words or ideas used in a class assignment submission do not represent your original words or ideas, you must cite all relevant sources and make clear the extent to which such sources were used. Words or ideas that require citation include, but are not limited to, all hard copy or electronic publications, whether copyrighted or not, and all verbal or visual communication when the content of such communication clearly originates from an identifiable sources.
All incidents of cheating and plagiarism are taken very seriously at the University of Kentucky, and there are specific policies and procedures in place to prosecute them. See S.R. 6.3.0 (PDF) for the exact Senate Rules regarding academic offenses.

Academic Accommodations Due to Disability
If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, submit to me a Letter of Accommodation from the Disability Resource Center). If you have not already done so, please register with the Disability Resource Center for coordination of campus disability services available to students with disabilities. Contact Jake Karnes via email at jkarnes@email.uky.edu or by telephone 859-257-2754. You may also visit the DRC website for information on how to register for services as a student with a disability: http://www.uky.edu/StudentAffairs/DisabilityResourceCenter/

Religious Observances
Students will be given the opportunity to make up work (typically, exams or assignments) when students notify their instructor that religious observances prevent the student from completing assignments according to deadlines stated in this syllabus. Students must notify the course instructor **at least two weeks prior to such an absence** and propose how to make up the missed academic work.

Inclement weather
The University of Kentucky has a detailed policy for decisions to close in inclement weather. The snow policy is described in detail at http://www.uky.edu/PR/News/severe_weather.htm or you can call (859) 257-1754.

Late work policy
Assignments that are turned in late will be marked one letter grade lower unless prior approval from the instructor has been obtained. It will be based on the time stamp provided by Blackboard. (NOTE: Assignments more than one week past the original due date will not be graded.)

Excused absences

S.R. 5.2.4.2. defines the following as acceptable reasons for excused absence:

a. serious illness;
b. illness or death of family member;
c. University-related trips;
d. major religious holidays;
e. other circumstances you find to be "reasonable cause for nonattendance".

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day for adding a class. Information regarding dates of major religious holidays may be obtained through the religious liaison, Mr. Jake Karnes (257-2754) http://www.uky.edu/Ombud/policies.php)

Course Calendar

Date	Topic	Readings/Watching	Assignment Dues
1/14 Wed	-Course logistics -Blackboard Features		1. Course syllabus and Blackboard course homepage should be fully understood!
1/21 Wed	(Lesson 1) -Overview of Health Informatics	• Textbook, Chapter 1 • VideoClips	1. Review "About this course" and "Syllabus" 2. Student Contract 3. Introduction to Yourself
1/28 Wed	(Lesson 2) -Biomedical Data, Information, and Knowledge	• Textbook, Chapter 2 • VideoClips	1. Discussion #1 2. Exercise #1 Due
2/4 Wed	(Lesson 3) -Data Analytics	• Textbook, Chapter 3	1. Discussion #2
2/11 Wed	(Lesson 4) -Electronic Health Records	• Textbook, Chapter 4 • VideoClips	1. Discussion #3
2/18 Wed	(Lesson 5) -Health Information Exchange	• Textbook, Chapter 5 • VideoClips	1. Discussion #4 2. Exercise #2 Due
2/25 Wed	(Lesson 6) -Data Standards	• Textbook, Chapter 6 • VideoClips	1. Discussion #5
3/4 Wed	(Lesson 7) -Health Information Privacy & Security	• Textbook, Chapter 8 • VideoClips	1. Discussion #6 2. Final Project Topic Due (for Graduate students only) 3. Weekly reading summary from lesson 1-7 (for undergraduate students only)
3/11 Wed	Review Week (Lesson 1- 7)	NO CLASS	NO CLASS
3/18 Wed	SPRING BREAK	NO CLASS	NO CLASS
3/25 Wed	(Lesson 8) -Consumer Health Informatics	1. Textbook, Chapter 10 2. VideoClips	1. Exercise #3 Learning Logs and Evaluation #1
4/1 Wed	(Lesson 9) -Online Medical Resources -Search Engines	• Textbook, Chapter 12 & 13 • VideoClips	1. Discussion #7
4/8 Wed	(Lesson 10) -Evidence-Based Medicine and Practice Guidelines	• Textbook, Chapter 14 • VideoClips	1. Discussion #8 2. Exercise #4 Due
4/15 Wed	(Lesson 11) -Telemedicine	• Textbook, Chapter 18 • VideoClips	1. Discussion #9
4/22 Wed	(Lesson 12) -Medical Imaging Informatics	• Textbook, Chapter 19 • VideoClips	1. Discussion #10 2. Exercise #5 Due
4/29 Wed	(Lesson 13) -Bioinformatics	• Textbook, Chapter 20 • VideoClips	1. Final Project Due (for graduate students only) 2. Weekly reading summary from lessons 7-13 (for undergraduate students only) 3. Learning Logs and Evaluation #2
5/6 Wed	Final Project Presentation		Graduate students only