

Introduction to Medical Informatics
MED INF 403
Syllabus
(last modified 12/20/09)

Instructor

Samuel Volchenboun

slv@uchicago.edu or gtalk: sam@volchenboun.com

Synchronous Sessions

Tuesdays, 7:00 – 9:00 PM Central Standard Time

Calendar at: <http://bit.ly/6lzHwr>

Description

This course is a survey of fundamental concepts and activities on information technology as applied to health care. Topics include computer-based medical records, knowledge-bases systems, decision theory and decision support, human-computer interfaces, systems integration, the digital library, and educational applications. Department-specific applications will also be discussed.

Expanded Course Description

The field of medical informatics has become an essential knowledge base for those involved in the practice of medicine and healthcare. In this course, the student will learn about the academic discipline of medical informatics, the role of medical informatics in clinical health care applications, and the use of medical and financial data in health care applications. The integration of medical research, clinical data, and theory in improving patient outcomes is presented. The nature of medical information and medical decision-making, along with the role of decision support systems and expert systems will be discussed in the course. Other topics include current and emerging information delivery methods such as web-based databases and decision support systems, enterprise information systems, and Regional Health Information Organizations. Students will explore issues of privacy, ethics, and compliance in the collection, distribution, and use of medical information, especially patient records.

Texts

The primary text for the course will be [Biomedical Informatics by Shortliffe and Cimino 3rd Edition](#).

Readings will be assigned in advance of each class and can be found on the course Web site.

Additionally, online articles will be used to supplement the text

Text Details

Biomedical Informatics: Computer Applications in Health Care and Biomedicine Series: Health Informatics, Shortliffe, Edward H. (Ed.) 3rd ed., 2006 Springer Science+Business Media, LLC, XXVI, 1037 p., 159 illus., 4 in color, Hardcover ISBN: 978-0-387-28986-1

Here are some purchasing options: <http://bit.ly/7rxJtj>

Student Learning Goals

- Understand the academic discipline of medical informatics and the role of medical informatics in clinical health care applications.
- Understand how medical data, including clinical, administrative, and financial data, are used in health care applications
- Understand the nature of medical knowledge and decision-making and the role of decision support systems and knowledge-based systems.
- Understand how current and emerging information delivery methods, including web-based databases and decision support systems, enterprise information systems, and Regional Health Information Organizations can be used to enhance patient outcomes
- Be sensitive to issues of privacy, ethics, and compliance in the collection, distribution, and use of medical information, especially patient records
- Be able to evaluate current informatics software and systems used for clinical and professional support
- Understand the integration between research, clinical data, and theory in improving patient outcomes

Prerequisites

There are no formal prerequisites to the course. It will be assumed that the student has some familiarity with databases and how information is organized, stored and retrieved on a computer. Basic statistics will be used to describe information retrieval techniques, but essential topics will be reviewed in class.

Teaching Method

The instructor will employ a blended teaching and learning approach, with 7-8 synchronous sessions and 1-2 group sessions. The course content will be delivered using an interactive presentation and discussion. Students will take responsibility for their own learning, including facilitating and participating in group and in-class discussions and participating in a group project.

Group Study and Class Projects

Students will form discussion groups for group study. A different student will be identified as the group facilitator for the two group projects.

There will be one minor and one major group project.

In the first project, each group will be assigned a topic relevant to the first half of the course. Each group will look through the literature and find 3-5 seminal and/or current research papers or manuscripts related to the topic. Each group will create a brief summary statement or whitepaper on the topic, and these will be distributed to your peers for their own reference. Further information will be available once the course begins.

A second, more substantial project, applies the concepts presented in the course to a challenging situation in healthcare. Groups will prepare a project proposal, final paper and in-class presentation of their project. More details will be provided at the start of the term.

Exams

There will be a mid-term and final exam. Both will be essay, “take-home” exams. The specific requirements for completing these exams will be described separately.

Participation

Involvement in group discussions and participation during the synchronous sessions is essential to the on-line learning experience. You are expected to be present during each synchronous session and to lend your input whenever appropriate. In addition, you will have the opportunity to participate in discussions in the class forums on the Blackboard Course site. Part of your final grade will be an evaluation of your participation in class as well as in the discussion forums.

Evaluation Method

Students will be evaluated using the following criteria:

- Team projects: 10% (minor), 20% (major)
- Participation and leadership in class, discussions and group: 15%
- Midterm exam 25%
- Final examination: 30%

Grading scale

A	93-100
A-	90-92
B+	88-89
B	83-87
B-	80-82
C+	78-79
C	73-77
C-	70-72
F	below 70

Course Schedule

All readings from the text and articles listed online should be prepared in advance of the Synchronous Session. You will need to read ahead on the syllabus to start working on the readings. Articles and discussion questions are listed in the online course management system. Lecture slides will be available immediately following the Synchronous Session.

Online Synchronous Meetings are Thursdays, 7:00 - 9:00 PM, CST. Students whose schedules do not permit them to attend the synchronous sessions are invited to review the sessions at other convenient times, since the sessions will be recorded and placed online. These students can interact with the instructor or graduate assistant if they have questions that have not been addressed in the online sessions. If students need to reschedule online presentations, they should contact the instructor.

Session	Text	Deliverables	Synch Session
1 Introduction to Medical Informatics; Information Retrieval and Digital Libraries	1,2,19	Introduce yourself in the Blackboard Course Site discussion area.	1/5/10
2 Data, Information, Knowledge; Medical Information Systems; Systems Development Life Cycle	2,6	Group HW #1 topics due 1/11 at 5pm CST	1/12/10
3 Databases and Information Retrieval Systems; Electronic Medical Record	5,12	Group HW #1 due 1/25 at 5pm CST	1/19/10
4 Standards, Ethical and Privacy Issues	7,10		1/26/10
5 Medical Reasoning; Probabilistic Methods; Knowledge Base; Clinical Decision Support	3,20	Midterm available on 1/27 Midterm due 2/1 at 11:59pm	2/2/10
6 Medical Enterprise Information Systems; Hospital Information Systems	13,16	Group HW#2 Idea Statement due 2/5, 5pm	2/9/10
7 Emerging Technologies; Computers in Medical Education	21	Group HW#2 Formal proposals due, 2/15, 5pm	2/16/10 NO SYNC SESSION
8 Human Computer Interface; Consumer Health Informatics; Health Information Infrastructure	4,14,15		2/23/10
9 Evaluating Technologies; Integration of Research and Clinical Information	11	Final exam available on 3/3	3/2/10
10 Future of Medical Informatics; Imaging Informatics; Final exam due	9,24	Present group project in sync session Final exam details: TBA	3/9/10

University Policies

Students with Disabilities

In compliance with Northwestern University policy and equal access laws, we are available to discuss appropriate academic accommodations you may require as a student with a disability. Request for academic accommodations need to be made during the first week of the quarter, except for unusual circumstances, so arrangements can be made. Students are encouraged to register with Services for Students with Disabilities (SSD) for disability verification and for determination of reasonable academic accommodations. For more information, visit <http://www.northwestern.edu/disability/>

Academic Integrity at Northwestern

Students are expected to comply with University regulations regarding academic integrity. If you are in doubt about what constitutes academic dishonesty, please speak to us before the assignment is due and/or examine the University web site, "How to Avoid Plagiarism at <http://www.northwestern.edu/uacc/plagiar.html>

Academic dishonesty includes, but is not limited to cheating on an exam (e.g., copying others' answers, providing information to others, using a crib sheet) or plagiarism of a paper (e.g., taking material from readings without citation, copying another student's paper). Failure to maintain academic integrity on an assignment will result in a loss of credit for that assignment – at a minimum. Other penalties may also apply. For more information, visit http://www.scs.northwestern.edu/student/issues/academic_integrity.cfm

Sexual Harassment Policy

It is the policy of Northwestern University that no male or female member of the Northwestern community – students, faculty, administrators or staff – may sexually harass any other member of the community. Sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature constitute harassment when: submission to such conduct is made or threatened to be made, either explicitly or implicitly, a term or condition of an individual's employment or education; or submission to or rejection of such conduct is used or threatened to be used as the basis for academic or employment decisions affecting that individual; or such conduct has the purpose or effect of substantially interfering with an individual's academic or professional performance or creating what a reasonable person would sense as an intimidating, hostile, or offensive employment, educational, or living environment. For more information, visit <http://www.northwestern.edu/sexual-harassment/policy/index.html>.