



Readings

COURSE HOME

The following text is required for the course and is referenced in the calendar of readings listed in the table below. [Buy at Amazon](#) Shortliffe, E. H., L. E. Perreault, G. Wiederhold, and L. M. Fagan. *Medical Informatics: Computer Applications in Health Care and Biomedicine*. 2nd ed. New York, NY: Springer, 2003. ISBN: 9780387984728.

SYLLABUS

CALENDAR

READINGS <

LECTURE NOTES

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PROJECTS

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LEC #	TOPICS	READINGS
1	Introduction: Nature of Modern Medicine and Medical Practice	Read Chapters 1 & 2 of Shortliffe.
2	Nature of Medical Data: Where it is and Where it is Not	Read Chapters 9 & 10 of Shortliffe.
3	Genomics in Medicine: Centrality of Bioinformatics	<p>"Initial Sequencing and Analysis of the Human Genome." <i>International Human Genome Sequencing Consortium</i>, 409 (2001): Macmillan Magazines Ltd.</p> <p>Chakravarti, Aravinda. "Population Genetics — Making Sense Out of Sequence." <i>Nature Genetics Supplement</i> 21 (Jan 1999): Ohio: Department of Genetics and Center for Human Genetics, Case Western Reserve University School of Medicine and University Hospitals of Cleveland.</p> <p>Brown, Patrick O., and David Botstein. "Exploring the New World of the Genome with DNA Microarrays." <i>Nature Genetics Supplement</i> 21 (Jan 1999): Stanford, California: Departments of Biochemistry and Genetics, and the Howard Hughes Medical Institute, Stanford University School of Medicine.</p>

		"Distinct Types of Diffuse Large B-cell Lymphoma Identified by Gene Expression Profiling." <i>Nature</i> 403 (3 Feb. 2000): Macmillan Magazines Ltd.
4	Patient Identification	Fellegi, Ivan P., and Allen B. Sunter. "A Theory for Record Linkage." <i>Journal of American Statistical Association</i> 64 (328) (Dec 1969): 1183-1210.
5	Countering Bioterrorism	Chapter 11 of Shortliffe.
6	Workflow, Decision Support and Data Gathering	<p>Mueller, Ganslandt, Frankewitsch, Krieglstein, Senninger, and Prokosch. "Workflow Analysis and Evidence-Based Medicine: Towards Integration of Knowledge-Based Functions in Hospital Information Systems." Germany: University of Muenster.</p> <p>Coiera, Enrico. "Clinical Communication: A New Informatics Paradigm." <i>Jamia</i> (1996): UK.</p> <p>Coiera, Enrico. "When Conversation is Better than Computation." <i>Jamia</i> (14 Jan. 2000): Washington DC.</p> <p>Kohane, Isaac S., Philip Greenspun, James Fackler, Christopher Cimino, and Peter Szolovits. "Application of Technology in Building National Electronic-Medical Record Systems via the World Wide Web." <i>Journal of the American Medical Informatics Association</i> 3 (3) (May/Jun 1996).</p>
7	Computing Support for the Enterprise	
8	Diagnosis, Standards, Codification	Chapters 6, 12 and 14 of Shortliffe.
9	Patient Data Confidentiality and Security	<p>Chapter 7 of Shortliffe.</p> <p>Barrows, Randolph. C. Jr., Paul D. Clayton. "Privacy Confidentiality and EMR." <i>Journal of the American Medical Informatics Association</i> 3 (2) (Mar/Apr 1996).</p> <p>Optional</p> <ul style="list-style-type: none"> • <i>For the Record. Protecting Electronic Health Information.</i> Washington D.C. : National Academy Press, 1997.
10	Decreasing Variability in Health Care	

11	Computerized Physician Order Entry: Using Technology To Improve Patient Safety	
12	Integration and Data Sharing or Medical Data for Quality Improvement	
13	Telemedicine	Chapter 14 of Shortliffe.
14	Genomic Medicine I: Population Genetics in the Post Genomic Era	<p>Lander, Eric S. "Array of hope." <i>Nature Genetics Supplement</i> 21 (1999): Cambridge, Massachusetts: America Inc.</p> <p>-----., and Nicholas J. Schork. "Genetic Dissection of Complex Traits." <i>Science, New Series</i>, 265 (5181) (30 Sep. 1994): 2037-2048.</p> <p>"Large-Scale Identification, Mapping, and Genotyping of Single-Nucleotide Polymorphisms in the Human Genome." <i>Science</i> 280 (15 May 1998): 1077. http://www.sciencemag.org</p>
15	Genomic Medicine II: Expression Arrays, Gene Clustering and Distance Metrics	Michael, P. S. Brown, William Noble Grundy, David Lin, Nello Cristianini, Charles Walsh Sugnet, Terence S. Furey, Manuel Ares, Jr., and David Haussler. "Knowledge-based Analysis of Microarray Gene Expression Data by Using Support Vector Machines." <i>PNAS</i> 97 (1) (4 Jan. 2000): 262-267.
16	Decision Analysis and Decision Support	<p>Chapters 15 and 16 of Shortliffe.</p> <p>Szolovits, P. "Uncertainty and Decisions in Medical Informatics." <i>Methods of Information in Medicine</i> 34 (1995): 111-21.</p>
17	Getting to Causality in Functional Genomics	<p>"The Transcriptional Program in the Response of Human Fibroblasts to Serum." <i>Science</i> 283 (1 Jan. 1999). www.sciencemag.org</p> <p>Ramoni, Marco F., Paola Sebastiani, and Isaac S. Kohane. "Cluster Analysis of Gene Expression Dynamics." <i>PNAS</i>. Edited by Louis M. Kunkel.</p>

18	Advanced Expert Systems	Chapters 12 and 13 of Shortliffe.
19	Patient Monitoring	
20	Genomic Medicine III: Introduction to Genomics	
21	Genomic Medicine IV: Linking Genotypes and Phenotypes	
22	Genomic Medicine V: Reverse Engineering	Zoltan. "The Perils and Promises of Massively Parallel Biology." Chap. 5 in <i>Genetic Network Analysis</i> , 2002: pp. 23.
23	Student Presentations	
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