

Uniformed Services University of the Health Sciences
Spring 2010 Course Syllabus for
BID 501 – Public Health Informatics

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Description:

The course provides students with a conceptual framework for understanding the emerging field of public health informatics. The course will include in-depth discussion of technology in the practice of public health with emphasis on preparing for and responding to manmade and natural disasters and emerging infectious diseases outbreaks. The course will also highlight successes and failures in implementing public health informatics projects and the critical role that leaders play in each step of the developmental process from idea inception through systematic implementation. ***This course is a product of an emerging collaboration between the Uniformed Services University and the National Library of Medicine.***

Required Reading:

Required and optional journal articles, and Web site content will be posted (by module) in Moodle®. Students should read all assigned reading prior to class where the related module is covered.

Optional Supplemental Reading:

Students aspiring to pursue opportunities in public health informatics should regularly scan key academic and professional journals such as *Journal of the American Medical Informatics Association*, *International Journal of Medical Informatics*, *Johns Hopkins University Applied Physics Laboratory Technical Digest*, *New England Journal of Medicine*, and *Journal of the American Public Health Association* to name a few. *Web sites, blogs, microblogs, and newsfeeds from these organizations and others also offer relevant content.*

Pre-requisite Courses:

None

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Subsequent Courses:

This course is the foundation course in public health informatics jointly sponsored by the USU Biomedical Informatics Department and the National Library of Medicine. Development of additional course offerings in the area of public health and/or disaster informatics is expected as the need, opportunity and funding align.

Overall Course Objectives:

Upon completion of this course, successful students will be prepared to:

- Recognize the basic concepts of informatics as used in Public Health and their core competencies.
- Identify the structure, content and tasks involved in each stage of the systems development life cycle: collection, analysis management and dissemination of information
- Describe and contrast the main types of computer-based tools available to public health professionals
- Demonstrate the use of at least one solution in Information Technology to perform research in public health
- List and understand the importance the organizational and management issues related to the implementation of a public health informatics system.
- Explain the purposes and requirements of an evaluation of a health information system used in public health
- Identify key steps in preparing for and responding to disaster situations from an information management / information technology perspective
- Formulate a proposal for the use of informatics for public health purposes.
- Create a design of a health information system for the preparation or response to manmade and natural disasters or emerging infectious diseases outbreaks
- Discuss the main aspects and the barriers that public health must address in developing the ideal health information systems.
- Integrate the aspects required for the development of policy and research decisions in biosurveillance.

Student Evaluation:

NOTE: Only USU matriculated students are required to complete the written assignments for the course; all others are encouraged to complete them and will receive a certificate for attendance/active engagement in at least 9 of the 12 sessions.

Student Grade Composition:	
Class participation and assignments	25%
Issue papers	30%
Final paper or project	45%

Class participation and assignments (25%):

Completing assigned reading and engaging in discussion (both in class and in Moodle® discussion threads or chats) is essential to understanding course material and success in the

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course. To that end, students must attend announced class sessions and be active learners throughout the course.

Issue papers (30%): During the term students will be required to submit TWO written issue papers. The issue papers are to be between three to five pages in length (double-spaced) and be structured into three sections:

- Background
- Position
- Support for position

While there is often no “right” or “wrong” position to a given issue, students are expected to support their argument using course and external material. It is entirely up to the student to select the issue paper topics. Students are encouraged to discuss a topic with a faculty member if you want to confirm a topic area before writing.

Final paper or project (45%): Students are required to complete a final paper or health informatics-related project that will be due on May 4, 2010. Details of the paper/project will be discussed during the first class session. In preparation students must also submit a one-page proposal no later than March 9, 2010 for approval. This requirement may be completed on an individual basis or in small groups.

Moodle® Participation:

Students are required to log into Moodle® regularly and check the course website before each class session. I will be posting announcements, additional readings, homework assignments, web links ... and discussion questions that I expect students to address during the course.

Tentative Course Schedule:

All class sessions will be held on Tuesdays from 5:30 pm to 7:30 pm on the campus of the Uniformed Services University, Bethesda, MD, Building E, Room – G250 (ground floor).

Class #	Date	Topic & Lecturer
1	2/16/10	<p>Introduction To Course & Overview Of Public Health Informatics Infrastructure - (Speakers: Dr. Ron Gimbel, USU & Dr. Steve Phillips, NLM)</p> <hr/> <p>Overview</p> <ul style="list-style-type: none"> • Review of syllabus & requirements • Introduction to public health informatics: concepts, history, principles, differences with medical informatics, components of an information system, importance and relevance (improvement of health, costs) • Organizational issues of public health informatics • Core competencies in public health informatics

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		<ul style="list-style-type: none"> • Description of the public health information actors, landscape, & organizational issues (incl. NLM) • Discussion of Moodle® Learning Management System
2	2/23/10	<p>Fundamentals of Threat Surveillance & Preparedness (Speaker-Dr. Joseph Lombardo & Wayne Loschen, Johns Hopkins University Applied Physics Laboratory)</p> <p>Implementation of Biosurveillance Information System:</p> <ul style="list-style-type: none"> • System Architecture • Hospital-based information • Databases • Web Applications • Syndromic Grouping • Detectors • Visualization of the application • Communication among users • Security and System Administration
		<p>Complete before class:</p> <ul style="list-style-type: none"> • Read: Lombardo, J. et al. <i>Public Health Surveillance for Mass Gatherings</i>. JHU/APL Technical Digest Paper (2008): 27(4).
3	3/2/10	<p>Public Health Informatics Theory & Application (Information Dissemination) – MEET IN USU LEARNING RESOURCE CENTER</p> <p>Information Dissemination on the Web, GIS, and Virtual Worlds (Victor Cid, NLM)</p> <ul style="list-style-type: none"> • Information display • Geospatial modeling • Simulation modeling • Dissemination frameworks and analyses • Chart and table data visualization • Primer on SecondLife <p>Web 2.0, Social Media, and Public Health Informatics (David Hale, NLM)</p> <ul style="list-style-type: none"> • Video: How social media is changing communication • Web as a Platform • Placeless Content – Information Set Free • “FlickTubeFaceSpace” – Online Communities • Health 2.0 – Participatory Healthcare • Public Health organizations use of Web 2.0 and social media tools • Published research overview • Crowdsourcing – The Wisdom of Crowds • mHealth – Health Information and Mobile Devices

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		<ul style="list-style-type: none"> • H1N1/social media case study <p>Complete before class:</p> <ul style="list-style-type: none"> • Read: Loschen, W (2008) Methods for Information Sharing to Support Health Monitoring. JHU/APL Technical Digest Paper. 27(4). • Read: O’Rielly, T. (2005). What is Web 2.0? http://oreilly.com/web2/archive/what-is-web-20.html • Identify at least several websites, blogs and microblogs relevant to this course.
4	3/09/10	<p>Public Health Information on the Web; Public Health Informatics Tools (Stacy Arnesen, NLM)</p> <ul style="list-style-type: none"> • Review of NLM tools and information resources • Non-NLM resources <p>Pillbox – Case Study in Government/Community Engagement (David Hale, NLM)</p> <ul style="list-style-type: none"> • Lessons from Silicon Valley • Community Ownership • Open + Transparent Government Data != Value • Regulatory, Legal, and Clinical Issues in Data Validation • Social Media and Guerilla Project Development • The Power of Being in “Beta” <p>Exercise: Assessing the quality and content of public health/disaster websites. Working in small groups the class will assess the quality of several public health and disaster resource websites using tool provided. Complete before class:</p> <ul style="list-style-type: none"> • Building on Week 3, find public health and disaster-related websites and blogs; come prepared to share with class • Become familiar with Second Life by visiting Health Info Island, Tox Town, and one other island relevant to public health
5	3/16/10	<p>Public Health Informatics Theory & Application: Information in Context of Global Settings – (Speakers: Julia Royall, NLM and Ceci Mundaca, MD, MPH, USU).</p> <p>Collecting and Managing Information Abroad: Experiences in Africa (Speaker: Julia Royall, NLM) 5:30pm-6:30pm</p>

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		<ul style="list-style-type: none"> • MedlinePlus African tutorial on Malaria • Blog on Uganda • Analysis of the baseline survey of knowledge of malaria in Mifumi Village
		<p>Implementation of Biosurveillance in Peru: Lessons in Implementation (Cecelia Mundaca, MPH USU) 6:30pm-7:30pm</p> <p>Complete before class: Review University of Washington chart of scope of public health informatics, and review Ms. Royall's blog on her experiences in Uganda.</p>
6	3/30/10	<p>Disaster Preparedness for Vulnerable Populations: Determining Effective Strategies for Communicating Risk, Warning & Response (Dr. Markku Hakkinen, Department of Computer Science and Information Systems, University of Jyväskylä, Jyväskylä, Finland, and The Paciello Group LLC)</p> <ul style="list-style-type: none"> • Define key issues in preparedness and response to natural disasters • Framework for evaluating preparedness
		<p>Complete before class:</p> <ul style="list-style-type: none"> • Complete assigned reading - 2006 Sullivan and Hakkinen publication on Disaster Preparedness for Vulnerable Populations: Determining Effective Strategies for Communicating Risk, Warning, and Response (http://magrann-conference.rutgers.edu/2006/_papers/sullivan.pdf)
7	4/6/10	<p>Case Study Exercise #1: West Nile Virus Outbreak (Facilitators: Jennifer Pakiam, NLM and Dr. Ron Gimbel, USU)</p> <ul style="list-style-type: none"> • Students (in small groups) will analyze and interpret case study using the questions provided. The groups will address what happened and alternative approaches.
		<p>Complete before class:</p> <ul style="list-style-type: none"> • Read case study provided by Ms. Pakiam
8	4/13/10	<p>Case Study Exercise #2: 2004 Indian Ocean Tsunami – (Facilitators: John Scott, CPSC And Dr. Ron Gimbel, USU)</p> <ul style="list-style-type: none"> • Students (in small groups) will analyze and interpret case study using the questions provided. The groups will identify and prioritize critical issues that would lead to mitigation of challenges.
		<p>Complete before class:</p> <ul style="list-style-type: none"> • Read case study to be provided by Mr. Scott

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9	4/20/10	<p>Global Approach to Chemicals and Consumer Products (Speaker: Dr. Bert Hakkinen, National Library of Medicine)</p> <ul style="list-style-type: none"> Review of chemical production and distribution, toxicities, approaches to information compilation and dissemination, etc. <hr/> <p>Case Study Exercise #3: Consumer Product and Workplace Safety: Roles of Companies and Other Organizations (Facilitators: Dr. Bert Hakkinen, NLM & Dr. Ron Gimbel, USU)</p> <ul style="list-style-type: none"> Students (in small groups) will analyze and interpret case studies using the questions provided. The groups will address what happened and alternative approaches. <hr/> <p>Complete before class:</p> <ul style="list-style-type: none"> Do a limited amount of online searching to identify consumer safety issues associated with “waterproofing spray” products, and with nanomaterial-containing consumer products. Review the US EPA’s and California EPA’s chemical assessment and management efforts (websites to be provided) Review the Massachusetts Department of Environmental Protection information on the 11/22/06 manufacturing plant explosion in Danvers, Massachusetts (http://www.mass.gov/dep/danfindg.htm), and look at the U.S. Chemical Safety Board’s 2008 video of the 3/23/05 explosion at the BP Refinery in Texas City, Texas (http://www.youtube.com/watch?v=XuJtdQOU_Z4&feature=related).
10	4/27/10	<p>Legal and Ethical Issues in Public Health (Speaker-TBD)</p> <ul style="list-style-type: none"> HIPAA and public health informatics Tension between government agencies, NGOs & industry regarding collection of information Ethical and legal issues regarding information gathering where consent is not a viable option <hr/> <p>Consumer Health Informatics (Dr. Rob Logan, NLM)</p> <ul style="list-style-type: none"> Barriers to information (incl. health literacy) Public health communication

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		Complete before class: Review a publication to be provided by Dr. Logan
11	5/4/10	<p>Leveraging Technology To Advance Public Health Prevention (Dr. Thomas Schroeder, Consumer Product Safety Commission) - <i>Invited</i></p> <p>Complete before class:</p> <ul style="list-style-type: none"> • Review of CPSC’s Home Page and links at http://www.cpsc.gov/ , together with information about the “Consumer Product Safety Improvement Act of 2008” (http://www.cpsc.gov/about/cpsia/cpsia.html). • Review/download CPSC’s National Electronic Injury Surveillance System (NEISS) data from www.cpsc.gov/library/neiss.html
12	5/11/10	<p>Reconstructing Health Security in Post-Conflict Environments: Information Needs and Management (Dr. Peter Saleh, DoD)</p> <p>Course wrap-up (Drs. Gimbel and Hakkinen)</p>