Course Title: **Public Health Informatics**

Course Number: 5516

Course credits: 3

Dates: August 26, 2014 to December 9, 2014

Days and Time: On-line: Tuesdays 6pm to 8pm

Place: Online - Blackboard

Course Director: Christopher B. Sullivan, PhD
Adjunct Associate Professor
Phone: 850-591-2821
Email: through the WebCT course site
Alternate email: csullivan@nova.edu

Office Hours: By appointment

Course Faculty:

Course Description:

Public health informatics is the systematic application of information and computer science and technology to public health practice, research and learning. This course focuses on developing the knowledge and skills of systemic application of information, computer science, and technology to public health practice. Students will acquire a basic understanding of informatics in public health practice, and be able to apply the skills of using some informatics tools in public health practices.

Prerequisites: None

Course Materials:

Government agency reports and strategic plans, presentations, videos/webinars, case studies and peer reviewed articles as assigned.

Course Structure and Requirements:

This course will use blackboard for the posting of all class-related materials. If you are not familiar with blackboard, you can log on to http://www.nova.edu/izone/blackboard_help.html for a quick tutorial.

In addition to having the necessary computer requirements to access blackboard, students will need to have access to a set of speakers/microphone for the live classroom exercises and chats.

Students are required to abide by the rules described under **Code of Conduct** in the College of Osteopathic Medicine Student handbook for the current academic year. The same Handbook gives the policies and procedures for dealing with alleged violations of the **Code of Conduct.**

FOR ASSISTANCE WITH TECHNICAL REQUIREMENTS PLEASE CONTACT (954) 262-HELP

Course Goals:

The purpose of this course is to provide students with a basic understanding of principles and infrastructure public health information system. The goal is for students to understand the national strategic e-health plan as well as to understand the basic tools that can be applied to design, develop, implement, and evaluate public health information systems.

Learning Objectives:

At the completion of this course, students will be able to:

1. Define public health informatics

2. Differentiate public health informatics from other health informatics domains

3. Develop a working vocabulary of public health informatics and information technology terminology

4. Identify challenges that can be addressed with public health informatics solutions

5. Understand the use of public health software applications.

6. Apply public health informatics principles, tools, and methodologies that can address population health programmatic needs.

7. Describe national e-heath priorities and strategies for improving population health through health IT.

8. Describe legal and ethical issues related to public health domain, including privacy, data exchange, and information security.

9. Identify the most likely information security threats in a public health systems, and appropriate remediation strategies.

10. Differentiate among the various types of data, data sources, applications and information systems at the local, state, national, and international levels.

11. Articulate the informatics aspects of some common business processes used in public health; e.g., case management, surveillance, client registration, case investigation.

12. Identify stakeholder and user needs and goals related to information and knowledge management. Apply user-centered design techniques to determine information needs.

13. Articulate the business case/need for a public health information system.

14. Understand how project management elements including budget, scope, schedule and human resources, influence the design and implementation of a public health information system.

15. Describe the importance of leveraging health information to improve public health, personal health and other systems.

Master of Public Health Program Core Competencies addressed during this course:

1. Apply information technology to diverse aspects of public health and communication.

2. Demonstrate understanding of the principles of, and the legal and ethical applications to, the collection of research data from human subject, as well as to the collection and reporting of other public health data.

3. Identify appropriate national, state and local public health surveillance data, and other data sources, and apply them to public health problems.

4. Identify and discuss strategies for collaboration and partnership among organizations focused on public health goals.

5. Demonstrate the ability to apply descriptive and inferential methods to solve public health problems.

Attendance Policy: "Attendance at all scheduled classes and online 'chat' sessions is required by HPD policy." Students are expected to attend each class. Attendance will be taken. If students miss class an extra assignment may be assigned to supplement the participation grade. It is the student's responsibility to provide adequate notice if they will be absent during a scheduled class activity.

Evaluation Methods: A combination of class discussions, written projects and midterm tests will be used to evaluate the student's performance. For the best outcomes, it is necessary that

students keep up with the course schedule. Toward this end, **a strict deadline policy will be enforced.** Make up and late assignments will only be accepted under highly unusual circumstances and with **<u>prior</u>** approval from the course director.

Plagiarism and Cheating: Plagiarism and cheating are violations of the Student Code of Conduct. Ethical conduct is expected from all our students. For more information, please see the student handbook. Plagiarized assignments, postings and exams will get a grade of 0.

Special Accommodations: Students regarding special accommodation for any reason should contact the Office of Student Disability Services.

Grading Points for Exams and Papers:

Assignment	Points	Weight in final grade
Class participation	1 point x 16 classes = 16 points	16%
Midterm Test #1	16 points	16%
Midterm Test #1	16 points	16%
Paper #1	16 points	16%
Paper #2	16 points	16%
Paper #3	20 points	20%
Total possible points	100 Points	100%

Grading Scale for Final Grade:

0-100 scale	Letter grade scale	QP Equivalent
94 - 100	A	4
90 - 93	A-	3.7
87 - 89	B+	3.3
84 - 86	B	3
80 - 83	B-	2.7
77 - 79	C+	2.3
73 - 76	C	2
70 - 72	C-	1.7
00 - 69	F	0

Course Schedule, Fall Semester 2013:

Week	Date	Topic	Reading	Assignment
1	8/26	Introduction to Public Health Informatics, Syllabus, Readings, Class Assignments, Blackboard, Instructor Expectations	1. What is biomedical informatics? Elmer V. Bernstam, Jack W. Smith, Todd R. Johnson. Journal of Biomedical Informatics 43 (2010) 104–110 2. Developing Informatics Tools and Strategies for Consumer-centered Health Communication, Alla Kesselman, PHD, et. al. Journal of the American Medical Informatics Association Volume 15 Number 4 July / August 2008 3. Public Health Surveillance and Informatics Program Office: FY 2013–2016 Strategic Plan	1. Download from Blackboard and read public health materials
2	9/2	Federal role in Public Health Informatics – Centers for Disease Control, Public Health Information Network, Federal Health IT Strategic Plan, Business Case for Public Health Standardization, related topics.	1. Office of the National Coordinator for Health IT: Federal Health IT Strategic Plan Progress Report, June 2013 2. Office of the National Coordinator for Health Information Technology (ONC): Federal Health Information Technology Strategic Plan, 2011 – 2015	1. Download from Blackboard and read public health materials
3	9/9	State role in Public Health Informatics – State initiatives, data surveillance and reporting, State examples: Behavioral Risk Factor Surveillance System, Florida CHARTS and other related state public health reporting websites	1. Public Health Information Network (PHIN) Strategic Plan: Strategies to Facilitate Standards-Based Public Health Information Exchange (2011 – 2016, Version 3.0, 10/13/2011 2. Public Health Informatics Profile Toolkit: Developing a Public Health Informatics Profile: A Toolkit for State and Local Health Departments to Assess their Informatics Capacity, The Minnesota Department of Health	1. Download from Blackboard and read public health materials 2. Paper #1: Topic and criteria to be Determined. Due 9/24
4	9/16	Guest lecturer invited to present example of health department reporting in Florida	1. Dr. Prakash Mulay, MBBS, MPH. Florida Department of Health Division of Environmental Health, ESSENCE- based chemical surveillance by incorporation of real time PIC data.	1. Download from Blackboard and read public health materials

			2. Florida Department of Health, Bureau of Epidemiology, ESSENCE User Guide, Version 1.0 (Oct. 2010) 3. FloridaCHARTS User's Guide, Empowering Communities with Health Information	
5	9/23	Health IT and data collection policies: Electronic Health Record (EHR) software and the EHR Incentive Program, Meaningful Use, certification of EHRs to collect clinical data, data repositories and use of Big Data.	1. Electronic Health Records, A Transformative Change for Public Health, Seth Foldy, MD, MPH, FAAFP, Director, Public Health Informatics and Technology Program Office, CDC 2. Physician Adoption of Electronic Health Record Systems: United States, 2011 3. Electronic Health Record Requirements for Public Health Agencies, 2009 4. Assessing the Potential of National Strategies for Electronic Health Records for Population Health Monitoring and Research, 2006	1. Download from Blackboard and read public health materials 2. Paper #2 Due
6	9/30	Health Information Exchange (HIE): Patient lookup models versus Direct secure messaging, state-level HIE cooperative agreements, use of HIE for public health reporting and as a repository for population health.	1. Public Health / Health Information Exchange Collaborative: A Model for Advancing Public Health Practice, Charles Magruder, Journal of Public Health Informatics, 2(2):e6, 2010 2. Public Health Informatics Institute, The Value of Health IT in Improving Population Health and Transforming Public Health Practice, November 2009 3. NORC at the University of Chicago, Assessing the Status and Prospects of State and Local Health Department Information Technology Infrastructure, January 2013	1. Download from Blackboard and read public health materials
7	10/7	Data standards for Meaningful Use, database repositories, data analysis and health information management, including:	1. Complete short course on standards - http://www.standardslearn.org/coursedetails.aspx?key=60 2. Meaningful Use and Public	1. Download from Blackboard and read public health materials 2. Midterm Exam #1:

		CCR, CCD, CCDA, LOINC, SNOMED, MEDCIN, ICD-9, ICD-10, CPT-4 and NDC.	Health, California Department of Public Health, Van Vu, DC, MS, March 16, 2011 3. Public Health and the Health IT for Economic &Clinical Improvement (HITECH) Act: CDC's roles, Seth Foldy, MD MPH FAAFP, Director, CDC/OSELS/ Public Health Informatics & Technology Program Office, IRGC, Feb. 11, 2011, Atlanta, GA	Take home Exam, due 10/15
8	10/14	Data standards for data exchange interoperability and reporting of surveillance data, including: HL7, XML, CCR versus CCD, EMPI/RLS, XDS, PIX/PDQ and X.509 certificates.	1. Assessing the Status and Prospects of State and Local Health Department Information Technology Infrastructure, NORC, 2013 2. Improving the Nation's Ability to Detect and Respond to 21st Century Urgent Health Threats: Second Report of the National Biosurveillance Advisory Subcommittee, Report to the Advisory Committee to the Director, CDC, April 2011	1. Download from Blackboard and read public health materials 2. Exam #1 Due
9	10/21	The use of statistics for public health reporting. Working with health care data. Data basics – types of data, methods of measurement, administrative versus clinical data using and relational databases for reporting and assessing public health issues.	1. Shaping a Health Statistics Vision for the 21st Century, Final Report, November 2002, Department of Health and Human Services Data Council, Centers for Disease Control and Prevention, National Center for Health Statistics, National Committee on Vital and Health Statistics 2. Reconsidering "Shaping a Health Statistics Vision for the 21st Century," National Committee on Vital and Health Statistics, 26 February 2009, Daniel J. Friedman, PhD & R. Gibson Parrish, MD. 3. For the Public's Health: The Role of Measurement in Action and Accountability, 2011, Committee on Public Health Strategies to Improve Health; Institute of Medicine	1. Download from Blackboard and read public health materials 2. Paper #2: Topic and criteria to be Determined. Due 11/5
10	10/28	Public Health	1. Association of State and	1. Download from

		Repositories and online software applications. State level reporting of Public Health data, data representation online and Public Health Software Applications.	Territorial Health Officials, Knowledge Management for Public Health Professionals, 2005 2. Public Health Data Standards Consortium, BUSINESS CASE: The Role of Public Health in National Health Information Technology Standardization, 2009, Baltimore, MD	Blackboard and read public health materials
11	11/4	Health Informatics data resources online from the National Information Center on Health Services Research and Health Care Technology (NICHSR) in the National Library of Medicine.	1. Public Health Conceptual Data Model, Premiere Edition, U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention (CDC), July 2000 2. The Public Health Conceptual Data Model HL7 RIM Harmonization, May 2000 3. Applying the Public Health Conceptual Data Model to the Implementation of the National Electronic Disease Surveillance System, Abdul-Malik Shakir, Senior Advisor, IDX eIntelligence Solutions Group, August 30, 2000 4. National Electronic Disease Surveillance System and the Public Health Conceptual Data Model (www.cdc.gov/od/hissb), Denise Koo, MD, MPH, Centers for Disease Control and Prevention, NCVHS, June 28, 2001	1. Download from Blackboard and read public health materials 2. Paper #2 Due
12	11/11	Using Federal Public Health Data tools – Epi-Info, CDC Wonder	1. Explore CDC EPI Info - http://wwwn.cdc.gov/epiinfo/ 2. Explore CDC Wonder - http://wonder.cdc.gov/ 3. BioSense, Public Health Surveillance Through Collaboration, Office of Surveillance, Epidemiology and Laboratory Services, Division of Notifiable Diseases and Healthcare Information, CDC	1. Download from Blackboard and read public health materials 2. Midterm Exam #2: Take home Exam, due 11/19
13	11/18	Representing Data Analytics in Geographical Information Systems	1. Centers for Disease Control and Prevention, Cartographic Guidelines for Public Health, August 2012	1. Download from Blackboard and read public health materials

			2. Web-based textbook: GIS Commons: An Introductory Textbook on Geographic Information Systems, Michael Schmandt, PhD: http://giscommons.org 3. Web-base resource: Spatial Data Web Resources, Health Impact Assessment Training – June 2010: http://www.sfdph.org/dph/files/EHSdocs/ehsPublsdocs/SpatialHealthData_GISResources.pdf	2. Midterm Exam #2 Due
14	11/25	Population Health and Big Data Analytics	1. Institute for Health Technology Transformation, Transforming Health Care Through Big Data: Strategies for leveraging big data in the health care industry 2. Center for US Health System Reform, Business Technology Office, McKinsey and Company, Peter Groves, Basel Kayyali, David Knott, Steve Van Kuiken, January 2013, The 'big data' revolution in healthcare: Accelerating value and innovation 3. Resource web page: The Innovation Economy: Information Revolution Transforming Health Care Through Big Data: http://bipartisanpolicy.org/events/2013/06/innovation-economy-information-revolution-transforming-health-care-through-big-data	1. Download from Blackboard and read public health materials 2. Paper #3: Topic and criteria to be Determined. Due 12/13
15	12/2	Future of data analytics and Informatics for Public Health	1. Public Health Information and Data: A Training Manual, National Network of Libraries of Medicine National Library of Medicine, 2004 2. The future of health intelligence: Challenges and opportunities, J. Flowers, B. Ferguson, Public Health 124 (2010) 274–277	1. Download from Blackboard and read public health materials
16	12/9	Final class wrap-up and all projects due.	Final assignments due on December 9.	1. Download from Blackboard and read public health materials

				2. Paper #3 Due

Assignments

Students are responsible for two exams during the course of the semester and three papers.

1. The two exams will be in short answer, open book format. Exams will be posted on Blackboard and students will have one week to complete and turn in each exam.

2. The three papers will be assigned through the semester, with topics to be determined based on class discussions, student background and experience, and course readings. Complete specifications for each paper will be posted on Blackboard and students will have two weeks to write and turn in.

Resources:

Assigned readings will be available on Blackboard in time for students to download and read. A full listing of each reading, with accompanying URL, will be made available on Blackboard for use as citations, if needed. The readings through the semester are extensive, and cover a broad perspective on public health informatics. Students are expected to keep up with the reading material and to apply it to weekly lectures. While the list appears overwhelming, many of the documents are short reports. Readings are listed below in the weekly order and are available on Blackboard:

Week 1:

1. What is biomedical informatics? Elmer V. Bernstam, Jack W. Smith, Todd R. Johnson. Journal of Biomedical Informatics 43 (2010) 104–110

2. Developing Informatics Tools and Strategies for Consumer-centered Health Communication, Alla Kesselman, PHD, et. al. Journal of the American Medical Informatics Association Volume 15 Number 4 July / August 2008

3. Public Health Surveillance and Informatics Program Office: FY 2013–2016 Strategic Plan

Week 2:

1. Office of the National Coordinator for Health IT: Federal Health IT Strategic Plan Progress Report, June 2013

2. Office of the National Coordinator for Health Information Technology (ONC): Federal Health Information Technology Strategic Plan, 2011 – 2015

Week 3:

1. Public Health Information Network (PHIN) Strategic Plan: Strategies to Facilitate Standards-Based Public Health Information Exchange (2011 – 2016, Version 3.0,

10/13/2011

2. Public Health Informatics Profile Toolkit: Developing a Public Health Informatics Profile:

A Toolkit for State and Local Health Departments to Assess their Informatics Capacity, The Minnesota Department of Health

Week 4:

1. Dr. Prakash Mulay, MBBS, MPH. Florida Department of Health Division of Environmental Health, ESSENCE- based chemical surveillance by incorporation of real time PIC data.

2. Florida Department of Health, Bureau of Epidemiology, ESSENCE User Guide, Version 1.0 (Oct. 2010)

3. Florida CHARTS User's Guide, Empowering Communities with Health Information

Week 5:

1. Electronic Health Records, A Transformative Change for Public Health, Seth Foldy, MD, MPH, FAAFP, Director, Public Health Informatics and Technology Program Office, CDC

2. Physician Adoption of Electronic Health Record Systems: United States, 2011

3. Electronic Health Record Requirements for Public Health Agencies, 2009

4. Assessing the Potential of National Strategies for Electronic Health Records for Population Health Monitoring and Research, 2006

Week 6:

1. Public Health / Health Information Exchange Collaborative: A Model for Advancing Public Health Practice, Charles Magruder, Journal of Public Health Informatics, 2(2):e6, 2010

2. Public Health Informatics Institute, The Value of Health IT in Improving Population Health and Transforming Public Health Practice, November 2009

3. NORC at the University of Chicago, FINAL REPORT - Assessing the Status and Prospects of State and Local Health Department Information Technology Infrastructure, January 2013, http://www.norc.org/PDFs/Walsh%20Center/NRHA_FinalReport_4%2027%2012_FINAL %20%282%29.pdf

Week 7:

1. Complete short course on standards - http://www.standardslearn.org/coursedetails.aspx?key=60

2. Meaningful Use and Public Health, California Department of Public Health, Van Vu, DC, MS, March 16, 2011

3. Public Health and the Health IT for Economic &Clinical Improvement (HITECH) Act:

CDC's roles, Seth Foldy, MD MPH FAAFP, Director, CDC/OSELS/, Public Health Informatics & Technology Program Office, IRGC, Feb. 11, 2011, Atlanta, GA

Week 8:

1. Assessing the Status and Prospects of State and Local Health Department Information Technology Infrastructure, NORC, 2013

2. Improving the Nation's Ability to Detect and Respond to 21st Century Urgent Health Threats: Second Report of the National Biosurveillance Advisory Subcommittee, Report to the Advisory Committee to the Director, CDC, April 2011

Week 9:

1. Shaping a Health Statistics Vision for the 21st Century, Final Report, November 2002, Department of Health and Human Services Data Council, Centers for Disease Control and Prevention, National Center for Health Statistics, National Committee on Vital and Health Statistics

2. Reconsidering "Shaping a Health Statistics Vision for the 21st Century," National Committee on Vital and Health Statistics, 26 February 2009, Daniel J. Friedman, PhD & R. Gibson Parrish, MD.

3. For the Public's Health: The Role of Measurement in Action and Accountability, 2011, Committee on Public Health Strategies to Improve Health; Institute of Medicine

Week 10:

1. Association of State and Territorial Health Officials, Knowledge Management for Public Health Professionals, 2005

2. Public Health Data Standards Consortium, BUSINESS CASE: The Role of Public Health in National Health Information Technology Standardization, 2009, Baltimore, MD

Week 11:

1. Public Health Conceptual Data Model, Premiere Edition, U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention (CDC), July 2000

2. The Public Health Conceptual Data Model HL7 RIM Harmonization, May 2000

3. Applying the Public Health Conceptual Data Model to the Implementation of the National Electronic Disease Surveillance System, Abdul-Malik Shakir, Senior Advisor, IDX eIntelligence Solutions Group, August 30, 2000

4. National Electronic Disease Surveillance System and the Public Health Conceptual Data Model (www.cdc.gov/od/hissb), Denise Koo, MD, MPH, Centers for Disease Control and Prevention, NCVHS, June 28, 2001

Week 12:

1. Explore CDC EPI Info - http://wwwn.cdc.gov/epiinfo/

2. Explore CDC Wonder - http://wonder.cdc.gov/

3. BioSense, Public Health Surveillance Through Collaboration, Office of Surveillance, Epidemiology and Laboratory Services, Division of Notifiable Diseases and Healthcare Information, CDC

Week 13:

1. Centers for Disease Control and Prevention, Cartographic Guidelines for Public Health, August 2012

2. Web-based textbook: GIS Commons: An Introductory Textbook on Geographic Information Systems, Michael Schmandt, PhD: http://giscommons.org

3. Web-base resource: Spatial Data Web Resources, Health Impact Assessment Training – June 2010: http://www.sfdph.org/dph/files/EHSdocs/ehsPublsdocs/SpatialHealthData_GISResources.pdf

Week 14:

1. Institute for Health Technology Transformation, Transforming Health Care Through Big Data: Strategies for leveraging big data in the health care industry

2. Center for US Health System Reform, Business Technology Office, McKinsey and Company, Peter Groves, Basel Kayyali, David Knott, Steve Van Kuiken, January 2013, The 'big data' revolution in healthcare: Accelerating value and innovation

3. Resource web page: The Innovation Economy: Information Revolution Transforming Health Care Through Big Data: http://bipartisanpolicy.org/events/2013/06/innovation-economy-information-revolution-transforming-health-care-through-big-data

Week 15:

1. Public Health Information and Data: A Training Manual, National Network of Libraries of Medicine, National Library of Medicine, 2004

2. The future of health intelligence: Challenges and opportunities, J. Flowers, B. Ferguson, Public Health 124 (2010) 274–277