Course Title: **Public Health Informatics**

Course Number: 5516

Course credits: 3

Dates: August 25, 2015 to December 8, 2015

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

Place: Online - Blackboard

Course Director:
Nicole Cook, PhD, MPA
Assistant Professor
Phone: 954-262-1505
Email: through the WebCT course site
Alternate email: nc570@nova.edu

Office Hours: By appointment

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

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 **prior** 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 (1.25 points per class)	20 points	16%
Personal Bio	10 points	10%
Paper #1	15 points	15%
Paper #2	15 points	15%
Paper #3	20 points	20%
Paper #4	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 2015

Week	Date	Topic	Description	Assignments
1	Aug 25 2015	Class Introduction	Introduction to PHI 5516 Public Health Informatics, Review of Syllabus, Readings, Class Assignments, Blackboard, Instructor Expectations	
Assignment: Personal Bio Due **Readings:** • Elmer V. Bernstam, Jack W. Smith, Todd R. Johnson. *What is biomedical informatics?* Journal of Biomedical Informatics 43 (2010) 104–110 • Alla Kesselman, PHD, et. al. *Developing Informatics Tools and Strategies for Consumer-centered Health Communication*.. Journal of the American Medical Informatics Association Volume 15 Number 4 July / August 2008 • American Health Information Management Association. *Defining the Basics of Health Informatics for HIM Professionals.* http://library.ahima.org/xpedio/groups/public/documents/ahima/bok1_050744.hcsp?dDocName=bok1_050744				
2	Sept 1 2015	Public Health Informatics defined	Introduction to public health informatics, data collection and reporting	
Readings: • Casimir A Kulikowski, Edward H Shortliffe, Leanne M Currie, Peter L Elkin, Lawrence E Hunter, Todd R Johnson, Ira J Kalet, Leslie A Lenert, Mark A Musen, Judy G Ozbolt, Jack W Smith, Peter Z Tarczy-Hornoch, Jeffrey J Williamson. *AMIA Board white paper: definition of biomedical informatics and specification of core competencies for graduate education in the discipline*. J Am Med Inform Assoc 2012;19:931–938. • Brian E. Dixon, MPA, PhD; Shaun J. Grannis, MD, MS. *Why "What Data Are Necessary for This Project?" and Other Basic Questions are Important to Address in Public Health Informatics Practice and Research*. Online Journal of Public Health Informatics . ISSN 1947-2579. http://ojphi.org * Vol.3, No. 3, 2011. • William A. Yasnoff, Patrick W. O'Carroll, Denise Koo, Robert W. Linkins, and Edwin M. Kilbourne. *Public Health Informatics: Improving and Transforming Public Health in the Information Age*. J Public Health Management Practice, 2000, 6(6), 67–75. This material was developed in the public domain. No copyright applies.				

<table>
<tr><td>3</td><td>Sept 8 2015</td><td>Data for public health reporting</td><td>Working with health care data for public health reporting. Data basics – types of data, methods of measurement, administrative versus clinical data, managing relational databases</td></tr>
<tr><td colspan="4">Readings:
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. Shaping a Health Statistics for the Vision 21st Century, Final Report, November 2002.
Committee on Public Health Strategies to Improve Health; Institute of Medicine. For the Public's Health: The Role of Measurement in Action and Accountability, 2011.</td></tr>
<tr><td>4</td><td>Sept 15 2015</td><td>Federal government role in public health</td><td>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</td></tr>
<tr><td colspan="4">Assignment:
Paper 1 Due
Readings:
Public Health Surveillance and Informatics Program Office: FY 2013–2016 Strategic Plan
Office of the National Coordinator for Health Information Technology. FEDERAL HEALTH IT STRATEGIC PLAN: 2015 – 2020
Seth Pazinski, Director, Office of Planning, Evaluation, and Analysis. Office of the National Coordinator for Health Information Technology. Federal Health IT Strategic Plan, 2015-2020. ONC Annual Meeting, February 2, 2015.</td></tr>
<tr><td>5</td><td>Sept 22 2015</td><td>State government role in public health</td><td>State role in Public Health Informatics – Statutory authority of Public Health agencies, data surveillance and reporting, strategic planning for informatics implementations</td></tr>
<tr><td colspan="4">Readings:
The Minnesota Department of Health. Public Health Informatics Profile Toolkit: Developing a Public Health Informatics Profile: A Toolkit for State and Local Health Departments to Assess their Informatics Capacity.
U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention (CDC). Public Health Information Network (PHIN) Strategic Plan: Strategies to Facilitate Standards-Based Public Health Information</td></tr>
</table>

	Exchange (2011 – 2016), Version 3.0, 10/13/2011		
6	Sept 29 2015	Public health reporting systems in Florida	Florida Example of Public Health Informatics reporting systems.
Readings: • Florida Department of Health, Bureau of Epidemiology, *ESSENCE User Guide, Version 1.0 (Oct. 2010)* • Dr. Prakash Mulay, MBBS, MPH. Florida Department of Health Division of Environmental Health. *ESSENCE- based chemical surveillance by incorporation of real time PIC data.* • Florida Department of Health. *FloridaCHARTS User's Guide*. *Empowering Communities with Health Information.*			
7	Oct 6 2015	Use of Health IT for public health reporting	Electronic Health Record (EHR) software and electronic data collection, EHR Incentive Program, Meaningful Use, public health data repositories for population health
Readings: • Chun-Ju Hsiao, Ph.D., and Esther Hing, M.P.H. *Use and Characteristics of Electronic Health Record Systems Among Office-based Physician Practices: United States, 2001–2013*.NCHS Data Brief, No. 143, January 2014. • *Developing an Electronic Health Record-Based Population Health Surveillance System*. A Report from the New York City Department of Health and Mental Hygiene, July 2013 • Public Health Informatics Institute. *Electronic Health Record Requirements for Public Health Agencies, 2009* • Kevin M. Jackson, OD, MPH, FAAO, CDR, MSC, USN. *ELECTRONIC HEALTH RECORDS AND PUBLIC HEALTH INFORMATICS.* Optometric Care within the Public Health Community © 2009 Old Post Publishing.			
8	Oct 13 2015	Data standards for electronic public health reporting	Data standards for database repositories, Meaningful Use, data analysis and health information management
Assignment: Paper 2 Due **Readings:** • AHIMA. *Data Standards, Data Quality, and Interoperability (Updated).* Editor's note: This update replaces the 2007 practice brief "Data Standards, Data Quality, and			

Interoperability."

- Van Vu, DC, MS. *Meaningful Use and Public Health, California Department of Public Health, March 16, 2011.* American Health Information Management Association.
- Seth Foldy, MD MPH FAAFP, Director, CDC/OSELS/, Public Health Informatics & Technology Program Office, IRGC. *Public Health and the Health IT for Economic &Clinical Improvement (HITECH) Act: CDC's roles,* Feb. 11, 2011. Atlanta, GA.

Course Schedule, Fall Semester 2015, continued

Week	Date	Topic	Description	Assignments
9	Oct 20 2015	Health Information Exchange and public health reporting	Health Information Exchange (HIE) for public health reporting, patient lookup model, Direct secure messaging, state initiatives	

Readings:

- Jason S. Shapiro, MD, MA, Farzad Mostashari, MD, MSc, MSPH, George Hripcsak, MD, MS, Nicholas Soulakis, MS, and Gilad Kuperman, MD, PhD. *Using Health Information Exchange to Improve Public Health.* American Journal of Public Health, April 2011, Vol 101, No. 4.
- Charles Magruder. *Public Health / Health Information Exchange Collaborative: A Model for Advancing Public Health Practice*. Journal of Public Health Informatics, 2(2):e6, 2010.
- NORC at the University of Chicago, *Assessing the Status and Prospects of State and Local Health Department Information Technology Infrastructure*, January 2013
- *The Value of Health IT in Improving Population Health and Transforming Public Health Practice: A Brief for Local and State Health Officials. November 2009.* A joint Publication of the Public Health Informatics Institute and the InfoLinks and Connections Communities of Practice.

10	Oct 27 2015	Standards for data exchange	Data standards for data exchange interoperability and reporting of surveillance data.	

Readings:

- *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.
- Public Health Data Standards Consortium, BUSINESS CASE*: The Role of Public Health*

<table>
<tr><td colspan="4">in National Health Information Technology Standardization, 2009, Baltimore, MD
Dawn Heisey-Grove, MPH, Hilary K. Wall, MPH, Amy Helwig, MD, Janet S. Wright, MD. Using Electronic Clinical Quality Measure Reporting for Public Health Surveillance. CDC, Morbidity and Mortality Weekly Report (MMWR). May 1, 2015, 64(16);439-442</td></tr>
<tr><td>11</td><td>Nov 3 2015</td><td>Conceptual Data Models for public health reporting</td><td>Public Health Data Model and National Electronic Disease Surveillance System, HL7 Reference Information Model</td></tr>
<tr><td colspan="4">Readings:
U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention (CDC). Public Health Conceptual Data Model, Premiere Edition, July 2000
U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention (CDC). The Public Health Conceptual Data Model HL7 RIM Harmonization, May 2000.
, Abdul-Malik Shakir, Senior Advisor, IDX eIntelligence Solutions Group. Applying the Public Health Conceptual Data Model to the Implementation of the National Electronic Disease Surveillance System, August 30, 2000
Denise Koo, MD, MPH. National Electronic Disease Surveillance System and the Public Health Conceptual Data Model (www.cdc.gov/od/hissb). Centers for Disease Control and Prevention, NCVHS, June 28, 2001</td></tr>
<tr><td>12</td><td>Nov 10 2015</td><td>Health Statistics Cycle for public health data</td><td>Health statistics cycle and the National Health Information Infrastructure, public health repositories and access to public health data</td></tr>
<tr><td colspan="4">Assignment:
Paper 3 Due
Readings:
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. Shaping a Health Statistics for the Vision 21st Century, Final Report, November 2002.
Daniel J. Friedman, PhD & R. Gibson Parrish, MD. Reconsidering “Shaping a Health Statistics Vision for the 21st Century,” National Committee on Vital and Health Statistics, 26 February 2009. Association of State and Territorial Health Officials, Knowledge Management for Public Health Professionals, 2005</td></tr>
</table>

13	Nov 17 2015	Public health reporting data tools	Using Federal Public Health Data tools – Epi-Info, CDC Wonder, data resources online from the National Information Center on Health Services Research and Health Care Technology (NICHSR).
Readings: • *Explore CDC EPI Info* - http://wwwn.cdc.gov/epiinfo/ • *Explore CDC Wonder* - http://wonder.cdc.gov/ • Office of Surveillance, Epidemiology and Laboratory Services, Division of Notifiable Diseases and Healthcare Information, CDC. *BioSense, Public Health Surveillance Through Collaboration*			
14	Nov 24 2015	Geographical Information Systems for public health reporting	Introduction to Geographical Information Systems (GIS) and graphical representation of data for public health reporting
Readings: • Centers for Disease Control and Prevention, *Cartographic Guidelines for Public Health, August 2012*, • Michael Schmandt, PhD. *Web-based textbook: GIS Commons: An Introductory Textbook on Geographic Information Systems*. See: http://giscommons.org • Web-based resource: *Spatial Data Web Resources, Health Impact Assessment Training – June 2010:* www.sfdph.org/dph/files/EHSdocs/ehsPublsdocs/SpatialHealthData_GISResources.pdf.			
15	Dec 1 2015	Big data and population health	Population Health and the future of big data analytics
Readings: • Daniel J Friedman, R Gibson Parrish II. *The population health record: concepts, definition, design, and implementation*. J Am Med Inform Assoc 2010;17:359e366. doi:10.1136/jamia.2009.001578. • Institute for Health Technology Transformation. *Transforming Health Care Through Big Data: Strategies for leveraging big data in the health care industry* • Peter Groves, Basel Kayyali, David Knott, Steve Van Kuiken. *The 'big data' revolution in healthcare: Accelerating value and innovation Center for US, January 2013*. Health System Reform, Business Technology Office, McKinsey and Company, ,			

Resource: • 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.			
16	Dec 8 2015	Future of public health informatics.	Future of data analytics and informatics for public health
Assignment: Paper 4 Due **Readings:** • Edmunds, Margo; Thorpe, Lorna; Sepulveda, Martin; Bezold, Clem; and Ross, David A. (2014) "*The Future of Public Health Informatics: Alternative Scenarios and Recommended Strategies*," eGEMs (Generating Evidence & Methods to improve patient outcomes): Vol. 2: Iss. 4, Article 3. Available at: http://repository.academyhealth.org/egems/vol2/iss4/3 • National Library of Medicine. *Public Health Information and Data: A Training Manual*. National Network of Libraries of Medicine. 2004 • J. Flowers, B. Ferguson. *The future of health intelligence: Challenges and opportunities.* Public Health 124 (2010) 274–277			

Assignments

Students are responsible for five papers during the course of the semester.

1. The first paper will be a short biographical sketch that provides the instructor and class a background to you and your experience, your interest in informatics and what you hope to learn from the class.

2. Four papers will be assigned through the semester, with topics based on class discussions, your experience and interests and course readings. Complete specifications for each paper will be posted on Blackboard and students will have three weeks to write and turn each one 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 intentionally 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 reports, strategic plans or specification documents.