

Mel and Enid Zuckerman College of Public Health

University of Arizona

**SYLLABUS**

**CPH/EPID 678 Principles of Public Health and Health Informatics**

# Spring 2015

**Time**: Tuesday 9:00-11:50 am (or Online)

**Location**: Drachman Hall, A119

**Instructor**: Zhao Chen, PhD, MPH

Professor of Public Health

Drachman Hall Room # 238

Phone: 520-626-9011

E-mail: [zchen@email.arizona.edu](mailto:zchen@email.arizona.edu)

**Instruction team (in addition to Dr. Zhao Chen):**

Dr. Angelika Gruessner, Professor of Biostatistics, former chief information officer at the Arizona Cancer Center; has extensive experience with registry data including pancreatic transplant registry and a leading researcher in using health informatics techniques in public health research.

Mr. Kenneth Komatsu, Adjunct Faculty of University of Arizona Mel and Enid Zuckerman College of Public Health, State Epidemiologist, Division of Public Health Services Arizona Department of Health Services; has years of experience on the application of public health informatics in state surveillance and health

Dr. Xiaohui Zhang is Technical Director at Focused eHealth Innovation Systems, leading multiple projects in support of federal agencies and state health departments in Health Information Technology implementation. He was Chief Scientist in Scientific Technologies Corp., directed development of statewide disease surveillance systems, real-time syndromic surveillance systems, and integration of state HIE and public health systems. He was Chief Technologist for planning and design of Hong Kong Communicable Disease Information System in response to 2003 SARS Outbreak, and the design of disease outbreak early detection system for 2008 Olympics in Beijing. He has served in the committee to organize biosurveillance workshops with NSF and global health informatics workshop with CDC.

**Office Hours**: by appointment

**Teaching Assistant**: N/A

**TA Office Hours**: N/A

**Catalog Description:**

Information technology has changed the way we perform our job and how we manage knowledge dramatically. This is an introductory course for health informatics that describes the changes how we perform and will perform a multitude of tasks in health sciences. It will provide an overview on the concept, history, science, application, and significance of health informatics. Main public health data bases will be used to show potential applications.

**Course Description:**

Today, health informatics and public health informatics have become necessary and important competencies for professionals and researchers in the field of health and public health. This course aims to increase students’ knowledge and capacity to work with data and information from health care and public health sources and increase their understanding on how to leverage technology to improve public health practice.

**Course Prerequisites**:

CPH573a Basic Principles of Epidemiology

CPH576a Biostatistics in Public Health

Students who have not taken the prerequisites will need permission from the instructor to enroll the class.

**Course Learning Objectives**:

Through lectures, discussions, in-class exercises, and homework, by the end of this course, students should

1. know how to define public health and health informatics
2. understand the context of public health and health informatics, including its history and its significant role for public health professionals and agencies in performing public health core functions and essential services
3. gain basic knowledge on the science of public health and health informatics
4. have the ability to outline the process and challenges of developing and managing a public health and health information system
5. learn about the impact of laws like HIPAA, the “Meaningful Use of Information” act and Health Information Exchange
6. know major local, national and international public health and health data sources
7. become familiar with the content, design, analysis and purpose of a number of selected public health surveillance systems, such as the Behavioral Risk Factor Surveillance System (BRFFS), National Vital Statistics, the National Health Interview Survey (NHIS) and the National Health and Nutrition Examination Survey (NHANES)
8. develop skills to use basic principles from epidemiology and biostatistics to analyze data and interpret results from a public health surveillance system and hospital information systems

**MPH/SECTION Competencies Covered:**

Analytical skills, communication skills, and basic public health science skills.

**Course Notes**: N/A

**Texts/Readings**:

**Required---**

[GIS Tutorial for Health, fifth edition](http://www.amazon.com/dp/1589483723/ref=rdr_ext_tmb) (Paperback) by [Kristen S. Kurland](http://www.amazon.com/s/ref=rdr_ext_aut?_encoding=UTF8&index=books&field-author=Kristen%20S.%20Kurland), [Wilpen L. Gorr](http://www.amazon.com/s/ref=rdr_ext_aut?_encoding=UTF8&index=books&field-author=Wilpen%20L.%20Gorr); ISBN-13: 978-1589483729 ISBN-10: 1589483723 Edition: 5th

**Reference books---**

1. Public Health Informatics and Information Systems--- Health Informatics Series (edited by P W O’Carroll, WA Yasnoff, ME Ward, LH Ripp, and EL Martin) 2003 Spinger-Verlag New York, Inc. ISBN 0-387-95474-0.
2. Disease Surveillance---a Public Health Informatics Approach (edited by JS Lombardo and DL Buckeridge)2007, John Wiley and Sons, Inc. ISBN 978-0470-06812-0
3. Health Informatics – Practical Guide for Healthcare and Information Technology Professionals  - 6th edition 2014 Robert E. Hoyt ISBN 978-304-79110-8
4. Biomedical Informatics: Computer Applications in Health Care and Biomedicine – 4th edition 2014 Shortliffe WH, Cimino JJ ISBN 978-1-4471-4474-8
5. Health Informatics – An Interprofessional Approach. Nelson R, Staggers, N. 2013. ISBN 978-0-323-10095-3

Additional readings will be provided via D2L.

**Course Requirements**:

Students are required to actively participate in class discussion and to collaboratively work in assigned group during the semester. Class assignments, including reading assignments, must be completed before arriving to class.

### Assignments:

1. Reading: Students are expected to read the assigned readings before the lecture and be ready to discuss them in class.
2. Homework: There are two homework assignments throughout the semester.
3. Midterm: midterm will be an in-class open book test.
4. Final paper and presentation: review on a selected topic of public health informatics or conduct a secondary data analysis using existing health or public health datasets. The final paper should start before the spring break. Additional instruction will be provided on March 3rd.

**Grading/Student Evaluation**:

10% Class participation

20% Homework

35% Midterm

35% Final paper and presentation

**Class Attendance/Participation**:

N/A

**Final Presentation**

Time and room # TBA

**Course Schedule**: (Dates of lecture posted, topics, assignments, readings, exams)

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***#*** | ***Date*** | | ***Topic*** | | ***Reading*** | ***Assignment*** | | ***Due*** | |
| **Module One: Concepts and Principles of Health Informatics (Angelika Gruessner)** | | | | | | | | | |
| 1 | Jan 20 | | Introduction: concept, history, core competencies and significance of public health and health informatics, ethics, privacy, confidentiality and security | |  | Reading assignment | |  | |
| 2 | Jan 27 | | Information and classification standards (Vocabulary, Grammar, Context)   * 1. Standards for data encoding and exchange   2. Coding systems and public health (ICD, SNOMED. LOINC, CPT, UMLS) | |  | Practical use of coding system-H | |  | |
| 3 | Feb 3 | | Health information technology and public health – Health Information Exchange -Knowledge systems. What brings the future (“Watson”) | |  | Reading assignment | |  | |
|  |  | |  | |  |  | |  | |
| 4 | Feb 10 | | Information technology – The impact of Web2.0 and Social Medical web sites and how the way we do research may change. | | Handouts |  | |  | |
| **Module Two: Basic Skills in Health Informatics (Xiaohui Zhang and Zhao Chen)** | | | | | | | | | |
| 5 | Feb 17 (Xiaohui) | | Applied Public Health Informatics – Lecture I: From Concepts to Practice | |  |  | | Practical use of coding system-H | |
| 6 | Feb 24  (Xiaohui) | | Applied Public Health Informatics – Lecture II: Application of Geographical Information Systems (GIS) to Public Health Practice | | GIS Tutorial for Health 5th Edition | GIS-H | |  | |
|  |  | |  | |  |  | |  | |
| 7 | Mar 3  (Zhao) | | Study design issues--using health information to address public health problems | |  | Final paper project | |  | |
| **8** | **March 10** | | **Midterm (8:00 pm --- 10:00 pm)** | | | | | | |
|  | **Spring Break** | | **( March 14-22)** | | | | | | |
| 9 | March 24 (Zhao) | | Mortality, morbidity data & risk factor information systems --- data analysis issues in public health informatics | |  |  | |  | |
| ***#*** | ***Date*** | ***Topic*** | | ***Reading*** | | | ***Assignment*** | | ***Due*** |
| **Module Three: Health Surveillance and Health Information Exchange (Kenneth Komatsu, Xiaohui Zhang, and Zhao Chen)** | | | | | | | | | |
| 10 | March 31 (Ken) | Federal and state initiatives - ACA, Meaningful Use, Health Information Exchange | |  | | |  | | GIS-H |
| 11 | April 7  (Xiaohui) | Health Information Exchange in Practice -- the real world examples of the integration of HIE with state public health systems, and latest HIT solutions in support of nation’s initiative in person-centered HIE | |  | | |  | |  |
| 13 | April 21 (Ken) | Overview of Public Health Surveillance in Arizona | |  | | |  | |  |
| 14 | April 28  (Ken) | BRFSS and NHANES in Arizona and other secondary data sources used for surveillance | |  | | |  | |  |
| 15 | May 5 (Zhao) | Health information systems at local hospitals and international networking | |  | | |  | |  |
| **16** | **May 12** | **Student project presentation** | |  | | |  | | **Final** |

PHIIS = Public Health Informatics and Information Systems

HOI = Handbook of Informatics for Nurses and Healthcare Professionals

DS = Disease Surveillance

H = Homework

**Communications**: You are responsible for reading emails sent to your UA account from your professor and the announcements that are placed on the course web site. Information about readings, news events, your grades, assignments and other course related topics will be communicated to you with these electronic methods. The official policy can be found at: <http://www.registrar.arizona.edu/emailpolicy.htm>

**Disability Accommodation:**  **If you anticipate issues related to the format or requirements of this course, please meet with me.  I would like us to discuss ways to ensure your full participation in the course.  If you determine that formal, disability-related accommodations are necessary, it is very important that you be registered with Disability Resources (621-3268; drc.arizona.edu) and notify me of your eligibility for reasonable accommodations.  We can then plan how best to coordinate your accommodations. The official policy can be found at:** <http://catalog.arizona.edu/2012%2D13/policies/disability.htm>

**Academic Integrity:** All UA students are responsible for upholding the University of Arizona Code of Academic Integrity, available through the office of the Dean of Students and online: The official policy found at: <http://deanofstudents.arizona.edu/codeofacademicintegrity>

**Classroom Behavior**: (Statement of expected behavior and respectful exchange of ideas)

The Dean of Students has set up expected standards for student behaviors and has defined and identified what is disruptive and threatening behavior. This information is available at: <http://deanofstudents.arizona.edu/disruptiveandthreateningstudentguidelines>

Students are expected to be familiar with the UA Policy on Disruptive and Threatening Student Behavior in an Instructional Settingfound at: [**http://policy.arizona.edu/disruptive-behavior-instructional**](http://policy.arizona.edu/disruptive-behavior-instructional)and the Policy on Threatening Behavior by Students found at: [**http://deanofstudents.arizona.edu/sites/deanofstudents.arizona.edu/files/Disruptive\_threat\_bklt\_2012.pdf**](http://deanofstudents.arizona.edu/sites/deanofstudents.arizona.edu/files/Disruptive_threat_bklt_2012.pdf)

**Grievance Policy**:  Should a student feel he or she has been treated unfairly, there are a number of resources available. With few exceptions, students should first attempt to resolve difficulties informally by bringing those concerns directly to the person responsible for the action, or with the student's graduate advisor, Assistant Dean for Student and Alumni Affairs, department head, or the immediate supervisor of the person responsible for the action. If the problem cannot be resolved informally, the student may file a formal grievance using the Graduate College Grievance Policy found at: <http://grad.arizona.edu/academics/policies/academic-policies/grievance-policy>

**Grade Appeal Policy**: <http://catalog.arizona.edu/2012-13/policies/gradappeal.htm>

**Syllabus Changes:**  Information contained in the course syllabus, other than the grade and absence policies, may be subject to change with reasonable advance notice, as deemed appropriate.