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# Syllabus

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## **SPH210 Course Objectives**

The objective of this course is to introduce the student to the field of public health informatics. The course provides an overview of important aspects of this emerging field within the context of public health practice. Topics covered include medical/health informatics and its relationship to public health informatics, basic information technology, and an in-depth look at prevailing public health information systems in the U.S. today. These include immunization registries, disease surveillance systems, laboratory information management systems, electronic vital record systems, and geographic information systems (GIS) in public health. The course includes a lab section focused on GIS systems in public health to provide the student an important foundation for the use of GIS in public health practice.

## **Lab:**

The laboratory portion of the course is designed to provide students with a hands-on experience with Geographic Information Systems (GIS), a critical tool in public health today. Key concepts provided in the laboratory segment include basic digital cartography principles, visualization of health data using GIS, and preparation of spatial data for GIS systems. During the six (6) two-hour sessions (see syllabus below), students will learn to use the ESRI ArcGIS system to create maps and project upon them health data. The syllabus follows the ESRI handbook titled "GIS Tutorial for Health (3rd edition)". Grades are determined by a combination of attendance and five exercises designed to confirm mastery of the ArcGIS tool.

GRADING: S/U

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## **Week 1 Lecture (Aug 5, 2009): Introduction to Public Health Informatics**

### **1. Introduction Public Health Informatics**

What is public health?

What is public health informatics?

Public health informatics and medical informatics

Key topics in public health informatics

### **2. Electronic Health Record systems (EHRs) and Public Health**

Introduction to Electronic medical record systems

Public health aspects of clinical information systems

ARRA and Comparative Effectiveness Research (CER)

Health information technology (HIT) and public health - glimpses of the future

## **Week 1 Lab (Aug 5, 2009): Introduction to GIS and ArcGIS**

Objectives: Review the basic principles of GIS including data structures (raster, vector), location and positioning, and projections

- understand GIS maps and their layers

- learn the basic capabilities of ArcGIS

- learn to navigate a map on ArcGIS

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## **Week 2 Lecture (Aug 12, 2009): Data Sets and Public Health**

(Gwyn Doebbert instructing )

### **1. Data sets in public health**

### **2. Data resources, surveys and other tools: Part II**

## **Week 2 Lab (Aug 12, 2009): Maps and Public Health**

Objectives:

- learn to use numeric scales and to modify scales for projections
  - learn to export map layouts as image files for presentations
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## **Week 3 Lecture (Aug 19, 2009): GIS In-Depth**

(Dr. Millington instructing)

1. Geographic Information Systems (GIS): Part I
2. Geographic Information Systems (GIS): Part II

## **Week 3 Lab (Aug 19, 2009): Studying Environmental Impact in Public Health**

Objectives:

- learn to gather required data sets and import them into ArcGIS
- use census tract data in public health maps
- learn about FIPS codes and their relevance to GIS maps
- review of relational database systems
- learn how to import data sets into a remote database management system

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## **Week 4 Lecture (Aug 26, 2009): Public Health Systems and Data Exchange Standards**

(Dr. Linnette Scott Instructing)

1. Organizational aspects of informatics
2. Informatics at work

## **Week 4 Lab (Aug 26, 2009): US Census Data and Mapping**

Objectives:

- learn about the U.S. Census TIGER geographic database
- learn about cartographic boundary files
- clean the census tract attribute data

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## **Week 5 Lecture (Sep 2, 2009):**

1. Data Quality is #1 (Dr. Oliva)

The data quality problem - why is it relevant to public health?

Types of 'data quality' problems in data systems

What is data accuracy?

Data quality assurance program

2. Data Exchange in Public Health (Dr. Hogarth)

Standards for data encoding and exchange

Health Information Exchange (HIE) systems

National Health Information Network (NHIN)

Data exchange in healthcare: HL-7

Coding systems and public health (ICD)

## **Week 5 Lab - Tutorial #6 (Sep 2, 2009): Geocoding Tabular Data**

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### **Week 6 (Sep 9, 2009):**

#### **1. Public health information systems in California**

Data collection systems - Vital records systems , Electronic laboratory reporting systems, California Office of Statewide Health Planning and Development (OSHPD), Public Health Surveys  
Using public health information systems - influenza pandemic, heat related deaths, violent deaths.

#### **2: Privacy, HIPAA, and computer security**

What is privacy versus security?

Historical background on medical privacy

HIPAA

Privacy versus the public good – the public health dilemma

What is 'computer security'?

Basic computer security - rational policies, common problems

Advanced computer security - intrusion detection, countermeasures, data sanitation

### **Week 6 Lab - Special Course Exercise provided in class (Sep 9, 2009):**

- learn about vital records data sets such as the statistical master file of deaths in California

- learn to create a subset of data from the pre-loaded death file on the remote relational database server

- learn to export the database subset for use in mapping location of death throughout Northern California