



SCHOOL OF PUBLIC HEALTH

HSMP 410: Introduction to Health Informatics **Spring 2018 (first offering)**

Faculty (all from Department of Medical Informatics & Clinical Epidemiology, School of Medicine, OHSU):

- William Hersh, MD, Professor (Course Co-Director)
- Ted Laderas, PhD, Assistant Professor (Course Co-Director)
- Karen Eden, PhD, Professor
- Eilis Boudreau, MD, PhD, Associate Professor
- Shannon McWeeney, PhD, Professor

Office Hours: By appointment

Course Description:

This course provides an introduction to health informatics, the field devoted to the optimal use of data, information, and knowledge to advance individual health, health care, public health, and health-related research. Students will learn the application of informatics skills and knowledge to health-related problems. Application activities will include simple data analysis and visualization of clinical data, answering clinical questions using information retrieval methods, and doing simple association analysis of gene variants and disease.

The course is focused toward upper-level undergraduates in health-related majors, although students from all majors may be admitted.

Course Learning Objectives:

1. Introduce students to problems and challenges that health informatics addresses
2. Introduce students to the research and practice of health informatics
3. Provide all students with basic skills and knowledge in health informatics to apply in their future health-related careers
4. Lead students in discussion around ethical and diversity issues in health informatics
5. Provide additional direction to those interested in further (i.e., graduate) study in the field

Textbook:

Hoyt, RE and Yoshihashi, A, Eds. (2014). *Health Informatics: Practical Guide for Healthcare and Information Technology Professionals, Sixth Edition*. Pensacola, FL, Lulu.com.

Student Learning Outcomes:

1. Develop knowledge about problems and challenges that health informatics addresses
2. Apply basic knowledge to the research and practice of health informatics
3. Demonstrate basic skills and knowledge in health informatics for application in future health-related careers

4. Demonstrate ability to ask, search for information, and answer health-related questions
5. Demonstrate ability to identify genomic variants associated with a disease phenotype and communicate this association
6. Perform visualization and simple analysis of a data set to assess difficulty of predicting cardiovascular risk in a synthetic patient dataset
7. Apply communication skills through an interview with an informatics professional and development of a written summary
8. Analyze ethical and diversity issues in health informatics

Outline of Course:

Each topic in the course will have a didactic introduction followed by hands-on application.

Week	TOPIC	ASSESSMENT
1.	<p>Overview of Field and Problems That Motivate It</p> <p>Objective: Introduce the research and practice of the field in the context of the problems that motivate its work.</p> <p>Motivational Questions: What are some of the problems that informatics tries to address in healthcare? Why do we need informatics?</p> <p>Reading Assignment: Hoy and Yoshihashi, Chapter 1</p>	<p>Quiz - Answer knowledge-based questions, grading based on percent correct</p>
2.	<p>Health Data, Information, and Knowledge</p> <p>Objective: Describe the data, information, and knowledge environment of health informatics, from cells and genes to people to health systems</p> <p>Motivational questions: How does informatics improve healthcare? How does a discovery go from a research finding to become actionable in the healthcare system?</p> <p>Reading Assignment: Hoy and Yoshihashi, Chapter 2</p>	<p>Quiz - Answer knowledge-based questions, grading based on percent correct</p>
3.	<p>Electronic Health Records</p> <p>Objective: Describe and demonstrate the electronic health record (EHR) and its derivatives, and the functions for which it is used, including clinical decision support and re-use of clinical data</p> <p>Motivational questions: How does information get into EHRs? How can we use this information? How does this inform us when we reuse EHR data?</p> <p>Reading Assignment: Hoy and Yoshihashi, Chapter 4</p>	<p>Quiz - Answer knowledge-based questions, grading based on percent correct</p>

4.	<p>Personal Health Records and Decision Aids</p> <p>Objective: Describe and demonstrate the personal health record (PHR) and decision aids, and the functions for which they are used to inform personal health decision-making</p> <p>Motivational questions: How does information get into PHRs? How can we use this information for personal health-related decision aids?</p> <p>Reading Assignment: Hoy and Yoshihashi, Chapter 10</p>	Quiz - Answer knowledge-based questions, grading based on percent correct
5.	<p>Information Retrieval (Search)</p> <p>Objective: Discuss the discovery and dissemination of health-related knowledge and demonstrate the ability to retrieve and appraise it</p> <p>Reading Assignment: Hoy and Yoshihashi, Chapters 12-13</p>	Demonstrate ability to ask, search for information, and answer a health-related question; grading based on rubric for completion of task
6.	<p>Bioinformatics</p> <p>Objective: Find and apply informatics in genomics and other aspects of molecular biology</p> <p>Motivational Questions: How do genes contribute to disease and how can we use this information to improve treatment of these diseases? How can informatics help?</p> <p>Reading Assignment: Hoy and Yoshihashi, Chapter 20</p>	Demonstrate ability to identify genomic variants associated with a disease phenotype and communicate this association, grading based on rubric for completion of task
7.	<p>Informatics Applications in Public Health</p> <p>Objective: Describe the applications of informatics to public health</p> <p>Motivational Questions: How can data and information improve public health?</p> <p>Reading Assignment: Hoy and Yoshihashi, Chapter 21</p>	Quiz - Answer knowledge-based questions, grading based on percent correct
8.	<p>Data Science, Analytics, and Visualization</p> <p>Objective: Apply analytical and visualization skills to data sets</p> <p>Motivational Questions: How does visualization help us understand clinical data? What are the pitfalls of clinical data? How can analytics improve health</p>	Perform visualization and simple analysis of a data set to assess difficulty of predicting cardiovascular risk in a synthetic patient dataset, grading based on rubric for completion of task

	care? Reading Assignment: Hoy and Yoshihashi, Chapter 3	
9.	<p>Ethical Issues in Health Informatics</p> <p>Objective: Discuss the ethical challenges for the use of data and information in health-related areas.</p> <p>Motivational Questions: How can we maximize the benefit while minimizing the risk of Health Informatics applications? How can we minimize discrimination that might occur from data, algorithms, and the digital divide?</p> <p>Reading Assignment: Hoy and Yoshihashi, Chapter 9</p>	
10.	<p>Careers in Health Informatics</p> <p>Objective: Describe the career and training options for work in health informatics</p> <p>Motivational Questions: What skills do I need to succeed within Health Informatics? What are the upcoming challenges?</p> <p>Reading Assignment: TBD</p>	Interview an informatics professional and describe their work in relation to course material in a short paper, grading based on completion of rubric for task
11.	Final Examination	

Culturally Responsive & Inclusive Curriculum:

We embrace a culturally responsive classroom. Communication ground rules for class include:

- Discussion in this class will be conducted in adherence to the University nondiscrimination policy.
- We should respect diverse points of view. We do not need to come to an agreement on any particular issues: we can agree to disagree.
- Our use of language should be respectful of other persons or groups. (Your instructors will not let injurious statements pass without comment.)
- You need not represent any group, only yourself, though you may choose to represent a group if you wish.
- If you feel uncomfortable about any aspect of the class environment, it is your responsibility to discuss it with the instructor.

Assessment and Grading Scale:

In addition to the topical assessments, students will also be required to complete:

1. Term paper on a topic of interest that goes beyond material covered in class (8-10 pages). Term paper requirements will be discussed in class and posted on d2l.
2. Final examination

Grading will be based on four components:

1. Weekly assignments – 30%

2. Term paper – 30%
3. Final exam – 30%
4. Class participation – 10%

The scale for grading will be:

95-100 – A
90-94 – A-
85-89 – B+
80-84 – B
75-79 – B-
70-74 – C+
65-69 – C
60-64 – C-
<60 – Fail

Academic Dishonesty:

Copying another student's work on an exam, homework, or plagiarizing anyone else's published material (including internet materials) in coursework will result in zero credit for that assignment. A "Complaint of Academic Dishonesty" will be filled with the Office of Student Affairs under Section XI of the PSU Student Code of Conduct (<https://www.pdx.edu/dos/psu-student-code-conduct>). Cheating or plagiarism by students is subject to the disciplinary process outlined in the Student Conduct Regulations.

Services to Students with Disabilities:

PSU values diversity and inclusion; we are committed to fostering mutual respect and full participation for all students. If you have, or think you may have, a disability that may affect your work in this class and feel you need accommodations, contact the Disability Resource Center to schedule an appointment and initiate a conversation about reasonable accommodations. The DRC is located in 116 Smith Memorial Student Union, 503-725-4150, drc@pdx.edu, <https://www.pdx.edu/drc>.

- If you already have accommodations, please contact your instructor to make sure that he/she has received a faculty notification letter and discuss your accommodations.
- Students who need accommodations for tests and quizzes are expected to schedule their tests to overlap with the time the class is taking the test.
- Please be aware that the accessible tables or chairs in the room should remain available for students who find that standard classroom seating is not useable.
- For information about emergency preparedness, please go to the [Fire and Life Safety webpage](https://www.pdx.edu/environmental-health-safety/fire-and-life-safety) (<https://www.pdx.edu/environmental-health-safety/fire-and-life-safety>) for information.

Safe Campus Module:

Students have access to the Safe Campus Module in d2l; we encourage all students to take advantage of this module and review the module at your earliest opportunity. <https://www.pdx.edu/sexual-assault/safe-campus-module> is a link that addresses the mandatory safe campus module and how to access the module through d2l. Violence, discrimination and harassment of any type is not appropriate behavior and are strictly prohibited through PSU's Student Code of Conduct (<https://www.pdx.edu/dos/psu-student-code-conduct>). The Student Code of Conduct clearly discusses violence, discrimination and harassment and the potential consequences of conducted acts of such. "You may report any incident of discrimination or discriminatory harassment, including sexual harassment, to either the Office of Equity and Compliance (<https://www.pdx.edu/diversity/office-of->

[equity-compliance](#)) or the Office of the Dean of Student Life (<https://www.pdx.edu/dos/office-dean-student-life>).”

If you have been sexually assaulted you are encouraged to contact the Enrollment Management & Student Affairs: Sexual Misconduct Prevention & Response site for emergency resources (<https://www.pdx.edu/sexual-assault/>) and other available resources.

Please be aware that as a faculty member, your instructor has the responsibility to report any instances of sexual harassment, sexual violence and/or other forms of prohibited discrimination. If you would rather share information about sexual harassment or sexual violence to a confidential employee who does not have this reporting responsibility, you can find [a list](#) of those individuals. For more information about Title IX please complete the required student module [Creating a Safe Campus](#) in your D2L.