



# University of Maryland School of Public Health

## HLTH 672 - Public Health Informatics

**Semester:** Fall 2019  
**Section:** 0101  
**Classroom and Time:** SPH 0307  
**Course webpage:** [Elms.umd.edu](http://Elms.umd.edu)  
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**Office Hours:** 9-9.30, T 6-7 pm, or by appointment

**Course Description:** The purpose of this course is to provide students with a basic understanding of Informatics and its application in a Public Health setting. The goal of Public Health Informatics is for students to understand the basic technological tools and building blocks needed to utilize these tools in to improve their personal and professional productivity.

**Course Pre- and Co-requisites:** None

### Course Learning Objectives:

Upon completing this course, the student will be able to:

1. Utilize a working vocabulary of information technology terminology
2. Describe the role public health informatics plays as a critical component of system-wide efforts to improve public health practice and training
3. Describe how public health professionals can use technology to improve professional effectiveness
4. Compare and contrast the various fields within informatics (e.g. biomedical informatics, public health informatics, consumer informatics)
5. Discuss the evolution of informatics within the U.S. and global health systems
6. Describe current and evolving US public health surveillance systems, including syndromic surveillance
7. Describe the benefits and challenges of electronic health records
8. Describe the US health informatics infrastructure at the national, state, and local levels
9. Develop critical and analytical skills about public health informatics issues and problems
10. Discuss the impact of public health informatics and advanced technologies on public health
11. Identify and demonstrate the various tools used in public health and related fields
12. Describe how consumers use technology for health, including searching for information and using online tools to manage or improve their health
13. Describe how health behavior theory has been used in online applications
14. Explain Web 2.0 and its impact on health and research
15. Describe research methodologies used to evaluate technology-based programs
16. Describe issues related to translating research into practice
17. Translate knowledge to effectively manage personal health.
18. Explain Health 2.0 and its impact on health and research

### **Behavioral and Community Health Competencies Addressed In This Course:**

1. Identify and use mobile/computer apps to gather information or collect data for use in the evaluation of research
2. Manage traditional and new media to communicate health information (e.g. statistics, reports) effectively

**Skills Learned or Reinforced in this Course:** This course will help students see the potential of technology use to increase professional and systems effectiveness across the spectrum of public health services. Students will have hands-on experiences that will allow them to develop critical thinking skills related to technology benefits and issues as well as help them learn to approach new and changing technologies in a positive way.

**Course Structure:** This course incorporates lecture, online and social media activity, online videos, interactive assignments, required readings, entries on discussion boards or social media with peer review of those entries, and individual activities and assignments to promote learning. The course is arranged in 15 one-week long modules (i.e., one for each week). Therefore, over the length of each week, you will be expected to complete all course module activities as you will see in the full content outline below in this syllabus. All materials will be organized on the HLTH 672 course site in Canvas.

**Course Philosophy:** This course relies heavily on active learning techniques (with a midterm exam and final project), with hands-on learning activities followed by written reflection, peer evaluation and commentary, and creative thought. Thus, individual activities provide students with multiple avenues of investigation into each topic, allowing reasonable depth and insight across many perspectives. Importantly, students are engaged in content across this range topics, providing ample opportunity for integration of the information and analysis of the interdisciplinary impact of informatics tools on public health practice.

**Required Texts and Other Readings:** No textbook is required for this class. Current peer-reviewed journal articles and/or reports will be assigned for each topical area each week.

**Required Technology and Other Materials:** Course materials will include video materials, a range of readings, including peer-reviewed research and review articles, opinion pieces, policy guidelines, newspaper and magazine articles, and Internet resources (e.g., web articles; online tutorials). Materials are available online at the campus ELMS/Canvas website (<https://elms.umd.edu/>). PDF files of all readings and other material are available for viewing and printing.

No technology is required. If you have a laptop, please bring it. At times, you will be asked to access free software, which will require the creation of an account. We will be using a simulated electronic health record during the second half of the semester. This will require a subscription purchase for the semester (\$45). We will share details on the first night of class.

**Course Communication:** Use Canvas to send email to the instructors. Your emails will be responded to within 24-48 hours of receipt during weekdays. Emails received after 5 on a Friday will be responded to on Monday. We will do the same with you – we will expect answers to email inquiries within 48 hours and not after hours or on weekends. Please plan accordingly. From time to time we may need to get in

touch with you and we'll expect you to check the email account and Announcements through Canvas regularly.

Contact the course instructors for any problems or issues you run into with course materials, assignments and/or whether you need any additional resources or assistance with an assignment. The HLTH 672 Canvas Discussion Boards will have a board established specifically for bulletin board communications with the instructor that relate to concerns or questions. If at any time you have a problem with the technology we're using, please use this board to reach the instructor or consult with the instructor during office hours listed on page one above.

**Course Requirements and Expectations:** This class will contain a mix of lecture, discussion, and in-class activities/assignments that will illustrate the informatics concepts covered. The in-class activities/assignments will be a mix of group and individual work. Each week, **prior to class**, you are expected to read the assigned article/s and any other materials. You will also complete follow-up assignments after each class. Attendance and participation are critical for you to successfully meet course objectives.

**Major Scheduled Grading Events and Prolonged Absences** In accordance with university policy, if you are absent for a single lecture due to illness or some form of personal or family emergency, this absence will be considered "excused," and we will accept a note from you, attesting to the date of the illness/incident, along with an acknowledgement that the information is true. Whenever feasible, you should contact us in advance. Multiple or prolonged absences, and absences that prevent attendance at a scheduled quiz or exam will require written documentation from an appropriate health care provider/organization. **Make up exams will be given only when the student has a University-recognized absence. If an exam is to be missed for a legitimate reason the student must contact us (by email ONLY) PRIOR to the exam.** If an exam is missed due to unforeseen circumstances on the day of the exam, the student must contact us **within 24 hours** of the missed exam. Official documentation of the excuse must be provided. If a student misses an exam for any unauthorized reason he/she will receive a grade of zero for that quiz or exam.

For complete information on the university's absence policy see:

<http://www.president.umd.edu/policies/v100g.html>

and the Undergraduate Catalog at

<http://www.umd.edu/catalog/index.cfm/show/content.section/c/27/ss/1584/s/1540>

**Copyright Notice:** Class lectures and other materials are copyrighted by us, the course instructors. This includes all tangible course materials, including but not limited to written or recorded lecture, PowerPoint presentations, handouts, tests, and other assignments. These materials **may not** be reproduced (e.g. students may not copy and distribute these materials) for anything other than personal use without my explicit written permission.

**University Course Related Policies:**

All University of Maryland-approved graduate course policies are provided here:

<https://gradschool.umd.edu/course-related-policies>

Policy descriptions, resources, and links to official policy documents are provided for:

**Academic Integrity:** What is cheating? What is plagiarism? What is the Honor Pledge?  
**Code of Student Conduct:** What behavior is prohibited?  
**Sexual Misconduct:** What to do in case of sexual harassment or sexual assault.  
**Non-Discrimination:** Procedures to prohibit discrimination, complaints about discrimination, harassment, and retaliation.  
**Accessibility:** Information about disability support services (DSS) and accommodations.  
**Attendance, Absences, or Missed Assignments:** The student must notify the instructor in a timely manner (typically first week of class). Read this prior to Schedule Adjustment date.  
**Student Rights Regarding Undergraduate Courses:** What should I find in the course syllabus? Am I allowed to see my exams after they are graded?  
**Official UMD Communication:** Use of email, communication with faculty, communication about cancelled class meetings, and weather-related or other urgent notifications.  
**Mid-Term Grades:** Provided for 100 and 200 level courses, and all student athletes.  
**Complaints About Course Final Grades:** Questions about course grades should first be addressed to the course instructor.  
**Copyright and Intellectual Property:** Who owns the work that I produce in class?  
**Final Exams:** Final exams are scheduled by the University.  
**Course Evaluations:** The School of Public Health is committed to the use of student course evaluations for improving the student experience, course and curriculum delivery, and faculty instruction.  
**Campus Resources:** ELMS, counseling, learning workshops, tutoring, writing help, questions about graduation, adding or dropping classes, withdrawing from the semester, etc.

**Course Procedures and Policies:** Email communications are to be through Canvas, as described above. All assignments are to be uploaded through Canvas.

#### **Inclement Weather / University Closings / Emergency Procedures:**

In the event that the University has a delayed opening or is closed for an emergency or extended period of time, the instructors will communicate to students regarding schedule adjustments, including rescheduling of examinations and assignments due to inclement weather and campus emergencies..

The course schedule will be maintained as best as possible even during campus emergency closings. This should not affect the availability of course materials through Canvas. Students must be prepared to continue their work even during campus closings. Individuals with specific circumstances that will prevent their participation during campus closures must notify the instructor.

#### **Available Support Services:**

- Office hours – M, W, F 9-9.30, T 6-7 pm or by appointment
- Campus Resources – <https://education.umd.edu/student-resources/student-campus-resources>

#### **Basic Needs Security**

If you have difficulty affording groceries or accessing sufficient food to eat every day, or lack a safe and stable place to live and believe this may affect your performance in this course, please visit <http://go.umd.edu/basic-needs> for information about resources the campus offers and let us know if we can help in any way.

**Major Graded Assignments:** You will receive grades on a midterm exam, a multi-component final project, and follow-up activities.

**Grading Procedures:**

Grading is based on the quality of the individual work. We are expecting all work to be completed on time. Student submissions will be graded by the instructors or in some cases by peer review. Final grades are based upon number of points accumulated during the course. The points available for each of the assignments is listed here:

Requirement	Points
Midterm Group Project	150
Follow-Up Assignments (15 responses, each 10 points)	150
Final Project: 5-minute Digital Story VLOG on your choice of topics and paper. Project components include submission of project topic and timelines, progress report, final project VLOG and paper	300
<b>Total Points Available For Final Grades</b>	<b>600</b>

**Required Module Activities:** There will be one or more active “Hands-On” in-class and follow-up learning activities in each of the modules. Each of these is explained in the syllabus and in the modules. These activities will allow you to apply the knowledge and skills covered in that week’s module.

**Homework Assignments:** For each of the modules there will be one or more homework assignments. For example, on the first day (Getting Started) you will be asked to introduce yourself to others in the class on the Canvas discussion board. To respond, you’ll go to the Discussion board in Canvas and respond to the assignment. For each of the topics in which there are follow-up assignments you will have to respond in the appropriate manner, which may include using Twitter to send a tweet, posting a short narrative on Facebook, or some other related new media / digital health application. On other occasions, you’ll also be asked to provide a brief reflection on any other student’s posting to an assignment. In all, there will be 15 of these follow-up assignments. Each of these will be worth 10 points. Total points available – 150 points.

**Group Midterm Project:** You will work in small groups to create a prototype for a simulation game for a mobile device that will allow users the opportunity to adopt healthier behaviors and reduce risk behaviors. Your simulation will be created in Adobe XD and your team will work together each week on different tasks that will contribute to your final prototype. You will have class time to work on the project; however, it is expected that you will continue the work outside of class time. Tasks will include: (1) Learning to use XD, (2) Learning about your target audience via direct engagement and through social media listening, (3) Incorporating health behavior theory components into your game, (4) Adding gamification elements, and (5) Usability testing. You will present your projects in class on 10/15/19. You will also complete peer reviews of 2 projects. Total points available – 150 points.

**Personal Project:** In lieu of a final examination, students will complete a final project in the form of a Video Log (VLOG). You will create a 5-minute VLOG, with narration and any other techniques you would like to apply (e.g., animation, graphic images, B-roll video, and/or music introduction or ending). You are

the principal narrator but you can include other friends or experts, and you can include video or still images including yourself if you wish. You will also complete a short summary paper (<3 pages) that contains a brief overview of the problem/issue and your target audience, your methods, any findings if appropriate, and a lessons-learned section.

All projects require the submission of the VLOG and the summary paper. Other additional materials may be required depending the project chosen.

You will have a choice of five topics from which you will choose one for your project. The five topics are:

1. **Community mapping** - Build a community database and create a community profile; create a map of assets and needs, and other visualizations illustrating the nature of the community's health (e.g., GIS map; infographic). Your project deliverable will include the map(s) and other visualization(s). For this project, your video will represent a 5-minute professional presentation about your community profile and conclude with recommended next steps for this community or for related research.
2. **Video Podcast** - conduct at least three brief interviews with public health professionals about their application of technology to public health. Your project deliverable will be the three video interviews edited together with an introduction, transitions, and a conclusion. Your summary paper will also include a description of your three interviewees, why they were selected, and an overview of what you were trying to accomplish with the podcast interviews.
3. **Twitter analysis** - choose a topic, aggregate all tweets for at least 5 days and do a preliminary analysis of group sentiment and themes, and characteristics of the sample of tweets. Your project deliverable will be an electronic copy of the tweets (e.g., in an excel file). Your summary paper will also include the purpose of your analysis, the methods used, and the results of your content analysis of the tweets. For this project, your video will represent a five-minute professional presentation of your research.
4. **Health apps or games** - Conduct a content analysis of the features included in 3-5 health apps or games for a specific topic (e.g. disease monitoring, healthy eating, stress management), identifying strengths and weaknesses. Propose an app that addresses the weaknesses of currently available apps. You could address issues around content, health behavior theory, usability, and/or readability. Include prototypes showing what your app/game would look like using Powerpoint or Adobe XD. **This must be distinctly different from your midterm project.** Your project deliverable will include the video presentation of the prototypes of your proposed app/game.
5. **A project of your choosing** - propose what you would like to do in 250 words or less. Your project deliverable will also include any materials developed and a write-up of the project.

The VLOG personal project will be worth a total of 300 points towards your final grade divided as follows:

- ✓ Sept 17: Topic overview: project plan including activities, sub-tasks, and dates of completion – 25 points
- ✓ Oct 29: Progress report due. This can be a video update (2 minutes) or a written update of your project status. Please include any questions. – 50 points
- ✓ Dec 3: Post final VLOG and paper - 150 points for VLOG, 75 points for paper

**Late submissions:** If you miss a homework deadline, your grade will be reduced by 10% for each day late. If it is not turned in after two days passed, you will be assigned a grade of zero (0) points. Your personal project deadline is Tuesday, Dec. 4. You may turn in your project for Instructor grading up to 48 hours late but the grade will be reduced by 10% for each day late. After that time, the project will not be accepted for grading.

**Calculation of Final Grades:**

A+	96%	576 points	C+	76%	456 points
A	92%	552 points	C	72%	432 points
A-	90%	540 points	C-	70%	420 points
B+	86%	516 points	D+	66%	396 points
B	82%	492 points	D	62%	372 points
B-	80%	480 points	F	<60%	<360 points

Course Module Outline	
8/27	<p><b>Module I: Introduction and overview to the field of public health informatics</b></p> <p><b>Learning Outcomes:</b></p> <ol style="list-style-type: none"> <li>1. Summarize the course requirements and expectations.</li> <li>2. Explain the course related implications of the UMD “social media policy” and “plagiarism policy.”</li> <li>3. Agree with the UMD Honor Code.</li> <li>4. Compile a brief introduction of themselves for their classmates.</li> <li>5. Define “public health informatics.”</li> <li>6. Explain how RSS technology can be used for public health practice.</li> </ol> <p><b>Lecture / Discussion Topics:</b></p> <ol style="list-style-type: none"> <li>1. What do we expect and want out of this class?</li> <li>2. What is public health informatics?</li> <li>3. How does today’s technology facilitate / inhibit relationships and groups for cooperation, collaboration, and collective action?</li> <li>4. What are RSS feeds and why should every public health practitioner know about them?</li> </ol> <p><b>Required Readings:</b></p> <ol style="list-style-type: none"> <li>1. A Discussion of Academic Dishonesty</li> <li>2. A Broader Definition of Plagiarism from <a href="http://www.plagiarism.org">Plagiarism.org</a> (Links to an external site.) - <a href="http://www.plagiarism.org/plagiarism-101/what-is-plagiarism/">http://www.plagiarism.org/plagiarism-101/what-is-plagiarism/</a> (Links to an external site.)</li> <li>3. University Honor Code / Pledge</li> <li>4. University Social Media Policy</li> <li>5. Baker, E.L., Fond, M., Hale, P., Cook, J. (2016). What is “Informatics”? <i>Journal of Public Health Management and Practice</i>, 22, 420-423, <a href="https://doi.org/10.1097/PHH.0000000000000415">https://doi.org/10.1097/PHH.0000000000000415</a></li> </ol> <p><b>In Class Hands-on Activities:</b></p> <ol style="list-style-type: none"> <li>1. Form midterm groups and think of a topic.</li> <li>2. Download "Feedly" or any other RSS aggregator. Choose a general health-related topic (e.g., healthy diet; recommended exercise behaviors; heart disease; etc.) that is of interest to you personally (or to your midterm topic). Then search for 10 different rss feeds for that topic/s and add to your rss aggregator.</li> </ol>

Course Module Outline	
	<ol style="list-style-type: none"> <li>3. Given the University's social media policy, either create a new Facebook account or use your existing account. (Not graded)</li> <li>4. <a href="#">Complete online survey</a> of technology use / capability. (Not graded)</li> <li>5. Join the HLTH Facebook Group <a href="#">here</a>.</li> </ol> <p><b>Homework Assignment</b></p> <ol style="list-style-type: none"> <li>1. Introduce yourself to your classmates on the appropriate bulletin board on canvas. Your post should be no longer than 200 words.</li> <li>2. Once you have joined the class Facebook group, prepare a post to the course Facebook page in which you briefly describe the rss feeds you've chosen and what makes them interesting to you. (&lt; 200 words)</li> </ol>
9/3	<p><b>Module 2: Introduction to Consumer Health/Digital Divide/User-Centered Design/Usability</b></p> <p><b>Learning Outcomes:</b></p> <ol style="list-style-type: none"> <li>1. Describe the three technology revolutions driving the growth of consumer health informatics;</li> <li>2. Describe the digital divide and trends related to internet use;</li> <li>3. Distinguish between the stages of user-centered design;</li> <li>4. Identify multiple techniques for user input during user-centered design;</li> <li>5. Define usability and its components;</li> <li>6. Distinguish user-centered design and usability.</li> </ol> <p><b>Lecture / Discussion Topics:</b></p> <ol style="list-style-type: none"> <li>1. How are consumers using the Internet and digital tools to manage or improve their health?</li> <li>2. Why should public health professionals know about tools for consumers?</li> <li>3. How do we incorporate user-centered design of technology products and services?</li> <li>4. Why is usability testing an essential component of product and service development?</li> <li>5. How can we create a prototype of a website or app?</li> </ol> <p><b>Required Readings:</b></p> <ol style="list-style-type: none"> <li>1. Castro-Sánchez, E., Spanoudakis, E., &amp; Holmes, A. H. (2015). <a href="#">Readability of Ebola Information on Websites of Public Health Agencies, United States, United Kingdom, Canada, Australia, and Europe</a>. <i>Emerging Infectious Diseases</i>, 21(7), 1217–1219. <a href="http://doi.org/10.3201/eid2107.141829">http://doi.org/10.3201/eid2107.141829</a> (Links to an external site.)</li> <li>2. Boudreaux, E. D., Fischer, A. C., Haskins, B. L., Saeed Zafar, Z., Chen, G., &amp; Chinai, S. A. (2016). <a href="#">Implementation of a Computerized Screening Inventory: Improved Usability Through Iterative Testing and Modification</a>. <i>JMIR Human Factors</i>, 3(1), e10. <a href="http://doi.org/10.2196/humanfactors.4896">http://doi.org/10.2196/humanfactors.4896</a></li> <li>3. Davies, E.L., Martin, J., Foxcroft, D.R. (2015). <a href="#">Development and acceptability of a co-produced online intervention to prevent alcohol misuse in adolescents: A think aloud study</a>. <i>Journal of Human Factors</i>, 2, doi:10.2196/humanfactors.4452 (Links to an external site.)</li> <li>4. Pew Internet and American Life. (2019). Fact Sheets: Social Media, Mobile, Internet and Broadband. <a href="http://www.pewinternet.org/fact-sheet/">http://www.pewinternet.org/fact-sheet/</a></li> </ol> <p><b>In Class Hands-on Activities:</b></p> <ol style="list-style-type: none"> <li>1. Collecting data from your target audience</li> </ol>

Course Module Outline	
	<p>2. Beginning to use Adobe XD</p> <p><b>Homework Assignment</b></p> <p>1. Read and summarize one of the usability case studies. Include discussion of any aspect of the case study that you found new or surprising.</p>
9/10	<p><b>Module 3: Social Media – Twitter Analysis/Social Network Analysis, Digital Storytelling</b></p> <p><b>Learning Outcomes:</b></p> <ol style="list-style-type: none"> <li>1. Lists the strengths and weaknesses of social media tools appropriate to public health goals;</li> <li>2. Distinguish between social media, social marketing, and health communication;</li> <li>3. Demonstrate basic skills with selected social media platforms;</li> <li>4. Assess approaches used in social media by public health agencies and organizations;</li> <li>5. Describe at least three different ways social media data may be relevant to public health practitioners;</li> <li>6. Formulate a plan for a social media campaign to influence health behavior in populations.</li> </ol> <p><b>Lecture / Discussion Topics:</b></p> <ol style="list-style-type: none"> <li>1. How can we compare and contrast social media, health communication, and social marketing? What changed from Web 1.0 to Web 2.0 to create the environment for today's social media? What are the benefits and challenges created by social media? How has social media contributed to public health practice? What can you teach us that you think we don't know?</li> <li>2. Teach us something we don't know!</li> <li>3. What other forms of social media are currently popular?</li> <li>4. How do thought leaders / experts / entities use social media differently within platform and between platforms?</li> <li>5. How can a public health campaign be created using social media?</li> <li>6. What are the research opportunities that come from social media?</li> </ol> <p><b>Required Readings:</b></p> <ol style="list-style-type: none"> <li>1. <a href="#">Bond, R. M., Fariss, C. J., Jones, J. J., Kramer, A. D., Marlow, C., Settle, J. E., &amp; Fowler, J. H. (2012). A 61-million-person experiment in social influence and political mobilization. <i>Nature</i>, 489(7415), 295-298. doi:10.1038/nature11421</a></li> <li>2. Hyojung Park, Bryan H. Reber &amp; Myoung-Gi Chon (2016) <a href="#">Tweeting as Health Communication: Health Organizations' Use of Twitter for Health Promotion and Public Engagement</a>, <i>Journal of Health Communication</i>, 21:2, 188-198, DOI:10.1080/10810730.2015.1058435</li> <li>3. Pagoto, S., Waring, M. E., May, C. N., Ding, E. Y., Kunz, W. H., Hayes, R., &amp; Oleski, J. L. (2016). <a href="#">Adapting Behavioral Interventions for Social Media Delivery</a>. <i>J Med Internet Res</i>, 18(1), e24. doi:10.2196/jmir.5086</li> <li>4. Xu, S., Markson, C., Costello, K. L., Xing, C. Y., Demissie, K., &amp; Llanos, A. A. (2016). <a href="#">Leveraging Social Media to Promote Public Health Knowledge: Example of Cancer Awareness via Twitter</a>. <i>JMIR Public Health Surveill</i>, 2(1), e17. doi:10.2196/publichealth.5205</li> </ol> <p><b>In Class Hands-on Activities:</b></p> <ol style="list-style-type: none"> <li>1. Given the University's social media policy, either create a new Twitter account or use your existing account.</li> </ol>

Course Module Outline	
	<ol style="list-style-type: none"> <li>2. Identify 5 thought leaders in public health (practitioners, policy makers, researchers, etc.) that have Twitter accounts and 5 who have Facebook accounts, and follow those thought leaders. It is OK for the same person to be used for each of these</li> <li>3. Identify 5 public health schools, organizations, or agencies that have Twitter accounts and 5 that have Facebook accounts, and follow these organizations. It is OK for the same entity to be used for each of these.</li> <li>4. Using Polleverywhere.com brainstorm different ways individuals and entities use social media based on a review of your choices.</li> <li>5. Prepare a “quoted Tweet” from your account to the class hashtag commenting on the quote your thought leaders tweeted that you believe everyone should see.</li> <li>6. Use Hootsuite or other social media search tool to identify how consumers are talking about the health behavior your Simulation Game Prototype Group is addressing.</li> </ol> <p><b>Homework Assignment</b></p> <ol style="list-style-type: none"> <li>1. Directly from your Feedly account, post 2 tweets and 2 Facebook posts from your RSS feeds. <i>NOTE: In all cases, when we talk about posts to Twitter, Facebook, Instagram or some other social media platform we mean to the one created for this class For example, the class Twitter hashtag (#hlth672) or the class Facebook group (HLTH 672).</i></li> </ol>
9/17	<p><b>Module 4: Introduction to mHealth/Text messaging strategies for public health interventions</b></p> <p><b>Learning Outcomes:</b></p> <ol style="list-style-type: none"> <li>1. Contrast the strengths and weaknesses of mHealth interventions.</li> <li>2. Examine the various ways mHealth tools are used.</li> <li>3. Explain the ethical issues related to the use of mHealth tools.</li> </ol> <p><b>Lecture / Discussion Topics:</b></p> <ol style="list-style-type: none"> <li>1. Taxonomy of mHealth tools.</li> <li>2. State-of-the-art of research on mHealth.</li> <li>3. Ethical issues related to mHealth tools.</li> </ol> <p><b>Required Readings:</b></p> <ol style="list-style-type: none"> <li>1. Cvrkel, T., The ethics of mHealth: Moving forward. J Dent, 2018. 74 Suppl 1: p. S15-S20.</li> <li>2. Peiris D, Miranda JJ, Mohr DC. Going beyond killer apps: building a better mHealth evidence base. BMJ Glob Health 2018;3:e000676. doi:10.1136/bmjgh-2017-000676</li> </ol> <p><b>In Class Hands-on Activities:</b></p> <ol style="list-style-type: none"> <li>1. What does it take to plan and deliver an mHealth intervention?</li> </ol> <p><b>Homework Assignment</b></p> <ol style="list-style-type: none"> <li>1. Case Study Reflection: From a list of three case studies choose one and write a 200 word reflection on that case study on a Discussion Board in Canvas.</li> <li>2. Choose a free behavior change app related to healthy eating, physical activity, stress management or other health topic. Use the app for several days and explore its features. We will discuss in class on 9/24/19.</li> <li>3. VLOG Topic due 9/17/19</li> </ol>

Course Module Outline

9/24	<p><b>Module 5: Consumer health behavior change/Online communities</b></p> <p><b>Learning Outcomes:</b></p> <ol style="list-style-type: none"> <li>1. Assess the role that behavior change theory plays in consumer health informatics;</li> <li>2. Identify commonalities and differences among behavior change apps</li> <li>3. Compare operational techniques used in online health communities.</li> <li>4. Define the quantified-self movement and the role it plays in the health of individuals and populations;</li> </ol> <p><b>Lecture / Discussion Topics:</b></p> <ol style="list-style-type: none"> <li>1. How do online behavior change programs help people change behaviors? What program components are important?</li> <li>2. What are online communities and what role can they play in impacting health?</li> <li>3. What is the quantified-self movement?</li> </ol> <p><b>Required Readings:</b></p> <ol style="list-style-type: none"> <li>1. Mercer, K., Giangregorio, L., Schneider, E., Chilana, P., Li, M., &amp; Grindrod, K. (2016). Acceptance of Commercially Available Wearable Activity Trackers Among Adults Aged Over 50 and With Chronic Illness: A Mixed-Methods Evaluation. <i>JMIR Mhealth Uhealth</i>, 4(1), e7. doi:10.2196/mhealth.4225.</li> <li>2. Tang, J., Abraham, C., Greaves, C., Yates, T. (2014) Self-Directed Interventions to Promote Weight Loss: A Systematic Review of Reviews <i>J Med Internet Res</i> 2014;16(2):e58, doi: <a href="https://doi.org/10.2196/jmir.2857">10.2196/jmir.2857</a></li> <li>3. <a href="#">deSouza, C.S., Preece, J., (2004). A framework for analyzing and understanding online communities Interacting with Computers, 16, 579-610..pdf</a></li> <li>4. <a href="#">The Growing Value of Digital Health</a></li> </ol> <p><b>In Class Hands-on Activities:</b></p> <ol style="list-style-type: none"> <li>1. Work on group project. Think about how you are using health behavior theory. What will your underlying theoretical framework be? What constructs will you include? How will you include them?</li> </ol> <p><b>Homework Assignment</b></p> <ol style="list-style-type: none"> <li>1. You are being asked to develop an online behavior change program to help sedentary people increase their physical activity. Describe 3 components that you think would be important for that program to include.</li> <li>2. Peer assessment: After reviewing the Facebook posts of your colleagues, provide a Facebook reply to at least one colleague, giving some meaningful feedback on their reviews from a public health perspective.</li> </ol>
10/1	<p><b>Module 6: Gamification</b></p> <p><b>Learning Outcomes</b></p> <ol style="list-style-type: none"> <li>1. Define the terms “gamification for health” and “serious games;”</li> <li>2. Identify gaming principles found in serious games;</li> <li>3. Demonstrate how to use gamification for health / serious games effectively;</li> <li>4. Distinguish which serious games might be valuable to public health practitioners;</li> <li>5. Construct a serious game design to influence health behavior.</li> </ol> <p><b>Lecture / Discussion Topics:</b></p> <ol style="list-style-type: none"> <li>1. What are the basic principles that underlie almost all games?</li> </ol>

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	<ol style="list-style-type: none"> <li>2. How can these principles be adapted for purposes other than simply having fun?</li> <li>3. Why would public health practitioners want to play serious games or use them in their work?</li> <li>4. Brainstorm potential serious game topics / strategies.</li> </ol> <p><b>Required Readings:</b></p> <ol style="list-style-type: none"> <li>1. Miller AS, Cafazzo JA, Seto E. (2014) <a href="#">A game plan: Gamification design principles in mHealth applications for chronic disease management</a>. Health Informatics Journal: Vol 22(2): 184-193. DOI: 10.1177/1460458214537511.</li> <li>2. T. Alahäivälä, H. Oinas-Kukkonen, Understanding persuasion contexts in health gamification: A systematic analysis of gamified health behavior change support systems literature, Int. J. Med. Inform. (2016), <a href="http://dx.doi.org/10.1016/j.ijmedinf.2016.02.006">http://dx.doi.org/10.1016/j.ijmedinf.2016.02.006</a></li> </ol> <p><b>In Class Hands-on Activities:</b></p> <ol style="list-style-type: none"> <li>1. Play at least one of the several recommended games found on this assignment page and evaluate how well you feel the game works. We will discuss why you chose it; evaluate how it worked for you during this week; and discuss briefly why you think it worked well or did not perform well for you.</li> <li>2. Incorporate gamification elements into your simulation game prototype</li> </ol> <p><b>Homework Assignment</b></p> <ol style="list-style-type: none"> <li>1. On the class Facebook page post your reflection on the quality and content of the Will Interactive game entitled "<a href="#">Pathways to safer opioid use</a>." (&lt;250 words).</li> </ol>
10/8	<p><b>Module 7: Cybersecurity</b></p> <p><b>Learning Outcomes</b></p> <ol style="list-style-type: none"> <li>1. Describe the magnitude of the problem of cybersecurity in the public health sector.</li> <li>2. Define best practices for individual cyber-hygiene for public health practitioners.</li> <li>3. Defend the role that social engineering must play for improving general cyber-hygiene practices of public health personnel.</li> </ol> <p><b>Lecture / Discussion Topics:</b></p> <ol style="list-style-type: none"> <li>1. What are the cybersecurity threats in the public health sector?</li> <li>2. What role does individual behavior play in weakening or strengthening defenses against cyber intrusion?</li> <li>3. What are common best practice behaviors for public health professionals in dealing with cybersecurity threats.</li> </ol> <p><b>Required Readings:</b></p> <ol style="list-style-type: none"> <li>1. D.J., B., et al., Cyber Security Threats to Public Health. World Medical and Health Policy, 2013. 5(1): p. 37-46.</li> <li>2. National Association of County and City Health Officers (NACCHO). Cybersecurity- Risks and recommendations for increasingly connected LHDs, in NACCHO Issue Brief. 2015, NACCHO: Washington D. C. p. 1-12.</li> </ol> <p><b>In Class Hands-on Activities:</b></p> <ol style="list-style-type: none"> <li>1. Desktop simulation of cyber threats</li> </ol>

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	<p>2. Tentative: EHRGo: Intro to Privacy and Security  <a href="https://web21.ehrgo.com/rd/?courseActivityId=187">https://web21.ehrgo.com/rd/?courseActivityId=187</a> and/or Release of Information (covers HIPAA)<a href="https://web21.ehrgo.com/rd/?courseActivityId=10318">https://web21.ehrgo.com/rd/?courseActivityId=10318</a></p> <p><b>Homework Assignment</b></p> <p>1. On this discussion board provide your reflections on either of the two required readings of external papers for this week. Include in your reflections each of the following (&lt;300 words): Provide a brief summary of your reactions to the paper; Was this a new issue to you? How extensive do think the threat really is for public health in the U.S.? What do you think you can personally do to reduce risks?</p>
10/15	<p><b>Module 8: Simulation Game Prototype Presentations</b></p> <p><b>Homework Assignment:</b></p> <ol style="list-style-type: none"> <li>Simulation Game Prototype Presentations</li> <li>Peer Review</li> </ol>
10/22	<p><b>Module 9: PHI Infrastructure and Policy/EHR</b></p> <p><b>Learning Outcomes</b></p> <ol style="list-style-type: none"> <li>Describe the government infrastructure that supports public health informatics.</li> <li>Describe specific policies that support an interconnected health system.</li> <li>Discuss the trade-offs between an interconnected healthcare system and individual privacy.</li> </ol> <p><b>Lecture / Discussion Topics:</b></p> <ol style="list-style-type: none"> <li>What Federal agencies drive policy and regulations exerting control over the use of technology in public health?</li> <li>What are the principal policies and regulations that drive the use and development of technology in public health?</li> <li>What is the difference between EHR/EMR/PHR?</li> <li>How do standards and interoperability affect health information exchange?</li> </ol> <p><b>Required Readings:</b></p> <ol style="list-style-type: none"> <li>Ratwani RM, et al. <a href="#">Electronic health record usability: analysis of the user-centered design processes of eleven electronic health record vendors</a>. J Am Med Inform Assoc 2015;0:1–5. doi:10.1093/jamia/ocv050.</li> <li>Edmunds, M. (2014). <a href="#">Public Health Informatics and Information Systems</a>. In J. A. Magnuson &amp; J. P. C. Fu (Eds.), <i>Public Health Informatics and Information Systems</i> (pp. 47–66). London: Springer-Verlag. <a href="http://doi.org/10.1007/978-1-4471-4237-9_4">http://doi.org/10.1007/978-1-4471-4237-9_4</a></li> </ol> <p><b>In Class Hands-on Activities:</b></p> <ol style="list-style-type: none"> <li>EHR Orientation - <a href="https://web21.ehrgo.com/rd/?courseActivityId=63">https://web21.ehrgo.com/rd/?courseActivityId=63</a></li> <li>The Power of the EHR - <a href="https://web21.ehrgo.com/rd/?courseActivityId=1826">https://web21.ehrgo.com/rd/?courseActivityId=1826</a></li> </ol> <p><b>Homework Assignment</b></p> <ol style="list-style-type: none"> <li>On the class Facebook page, reflect on whether or how your experience with the EHR affected your feelings about the benefits of EHR for patients, providers, and public health practitioners and/or describe any personal/professional experiences you have had with EHRs</li> </ol>

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10/29	<p><b>Module 10: Pivot Tables/Databases and Dashboards</b></p> <p><b>Learning Outcomes</b></p> <ol style="list-style-type: none"> <li>1. Define and describe the purpose of a database</li> <li>2. Define a relational database and describe simple commands</li> <li>3. Describe how databases have been used in public health practice</li> <li>4. Describe a simple message library for tailored messaging</li> </ol> <p><b>Lecture / Discussion Topics:</b></p> <ol style="list-style-type: none"> <li>1. What are databases?</li> <li>2. What are the advantages of a relational database?</li> <li>3. How have databases been used in public health?</li> <li>4. What is a message library?</li> </ol> <p><b>Required Readings:</b></p> <p>Brown, J. (2010) Using a relational database to index infectious disease. <i>International Journal of Environmental Research and Public Health</i>, 7, 2177-2190, doi:10.3390/ijerph7052177</p> <p><b>In Class Hands-on Activities:</b></p> <ol style="list-style-type: none"> <li>1. Using pivot tables and slicers</li> <li>2. Tentative: Applied Data Analytics 1  <a href="https://web21.ehrngo.com/rd/?courseActivityId=13691">https://web21.ehrngo.com/rd/?courseActivityId=13691</a>; Applied Data Analytics 2;  <a href="https://web21.ehrngo.com/rd/?courseActivityId=13693">https://web21.ehrngo.com/rd/?courseActivityId=13693</a>; Applied Data Analytics 3,  <a href="https://web21.ehrngo.com/rd/?courseActivityId=13695">https://web21.ehrngo.com/rd/?courseActivityId=13695</a></li> </ol> <p><b>Homework Assignment:</b></p> <ol style="list-style-type: none"> <li>1. Build a table and graphic with the slicer from the HINTS database</li> </ol>
11/5	<p><b>Module 11: Informatics and Public Health Surveillance/Syndromic Surveillance/Citizen Science</b></p> <p><b>Learning Outcomes</b></p> <ol style="list-style-type: none"> <li>1. Understand how technology has impacted traditional public health surveillance systems, including changes in workflow</li> <li>2. Describe non-traditional approaches to surveillance</li> <li>3. Use readily-available data to create a health profile of a state, county, or city</li> </ol> <p><b>Lecture / Discussion Topics:</b></p> <ol style="list-style-type: none"> <li>1. What are the components of CDC's surveillance strategy?</li> <li>2. How has technology enabled new and faster ways of collecting health information?</li> <li>3. How can electronic health records serve as a data source for public health?</li> </ol> <p><b>Required Readings:</b></p> <ol style="list-style-type: none"> <li>1. Tripp, J. S., Duncan, J. D., Finch, L., &amp; Huff, S. M. (2015). Completing Death Certificates from an EMR: Analysis of a Novel Public-Private Partnership. <i>AMIA Annual Symposium Proceedings, 2015</i>, 1214–1223.</li> <li>2. Smolinski, M. S., Crawley, A. W., Baltrusaitis, K., Chunara, R., Olsen, J. M., Wójcik, O., ... Brownstein, J. S. (2015). Flu Near You: Crowdsourced Symptom Reporting Spanning 2 Influenza Seasons. <i>American Journal of Public Health</i>, 105(10), 2124–2130.  <a href="http://doi.org/10.2105/AJPH.2015.302696">http://doi.org/10.2105/AJPH.2015.302696</a></li> </ol>

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	<p>3. Birkhead GS, Klompas M, Shah NR. Public health surveillance using electronic health records: rising potential to advance public health. <i>Front Public Health Serv Sys Res</i> 2015; 4(5):25–32. DOI: 10.13023/FPHSSR.0405.05.</p> <p><b>In Class Hands-on Activities:</b></p> <ol style="list-style-type: none"> <li>1. Tentative: Query Basic - <a href="https://web21.ehrngo.com/rd/?courseActivityId=23489">https://web21.ehrngo.com/rd/?courseActivityId=23489</a>; Query Advanced - <a href="https://web21.ehrngo.com/rd/?courseActivityId=23483">https://web21.ehrngo.com/rd/?courseActivityId=23483</a>; Tobacco Cessation program - <a href="https://web21.ehrngo.com/rd/?courseActivityId=23507">https://web21.ehrngo.com/rd/?courseActivityId=23507</a></li> </ol> <p><b>Homework Assignment</b></p> <ol style="list-style-type: none"> <li>1. Listen to this podcast: <a href="https://phii.org/blog/podcast-chicagos-demonstration-project-sti-electronic-case-reporting">https://phii.org/blog/podcast-chicagos-demonstration-project-sti-electronic-case-reporting</a> describing a demonstration project. Reflect in a short paragraph about the challenges of interconnecting our silo'd systems.</li> </ol>
11/12	<p><b>Module 12: Data Visualization – Excel and Tableau</b></p> <p><b>Learning Outcomes:</b></p> <ol style="list-style-type: none"> <li>1. Understand how visualizations can be improved by understanding basics of visual perception</li> <li>2. Use Excel, Tableau, and other online tools to create visualizations;</li> <li>3. Incorporate best practices around simplification and emphasis to create effective visualizations;</li> <li>4. Evaluate the effectiveness of visualizations provided.</li> </ol> <p><b>Lecture / Discussion Topics:</b></p> <ol style="list-style-type: none"> <li>1. What makes an effective visualization?</li> <li>2. How have public health practitioners used data visualization to convey information?</li> </ol> <p><b>Required Readings:</b></p> <ol style="list-style-type: none"> <li>1. Hanneke, R., &amp; Link, J. M. (2019). The complex nature of research dissemination practices among public health faculty researchers. <i>Journal of the Medical Library Association</i> : JMLA, 107(3), 341–351. doi:10.5195/jmla.2019.524</li> <li>2. Evergreen, S. (n.d.). How to build data visualizations in Excel. <a href="http://stephanieevergreen.com/how-to/">http://stephanieevergreen.com/how-to/</a></li> <li>3. Emery, A. (2014). How to visualize qualitative data. <a href="https://depictdatastudio.com/how-to-visualize-qualitative-data/">https://depictdatastudio.com/how-to-visualize-qualitative-data/</a></li> </ol> <p><b>In Class Hands-on Activities:</b></p> <ol style="list-style-type: none"> <li>1. Tentative: Orientation to data visualization: <a href="https://web21.ehrngo.com/rd/?courseActivityId=13697">https://web21.ehrngo.com/rd/?courseActivityId=13697</a>; Clinical reminder data: <a href="https://web21.ehrngo.com/rd/?courseActivityId=13699u">https://web21.ehrngo.com/rd/?courseActivityId=13699u</a></li> </ol> <p><b>Homework Assignment</b></p> <ol style="list-style-type: none"> <li>1. Find a visualization from either a report, research article, or a newspaper, post a link to that visualization with a short critique on the class Facebook page. Be sure to discuss how/whether having informative text, and principles of simplification and/or emphasis impact the clarity of the visualization you chose (&lt;250 words).</li> </ol>
11/19	<p><b>Module 13: Data Visualization Part 2: Infographics and Video</b></p> <p><b>Learning Outcomes:</b></p> <ol style="list-style-type: none"> <li>1. Utilize current tools to create effective infographics</li> </ol>

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	<p>2. Increase video editing skills</p> <p><b>Lecture / Discussion Topics</b></p> <ol style="list-style-type: none"> <li>1. Applying best practices to creating effective infographics and video</li> <li>2. Consider how public health practitioners can use infographics and video to communicate health information and tell a digital story</li> </ol> <p><b>Required Readings:</b></p> <ol style="list-style-type: none"> <li>1. Arcia, A., Suero-Tejeda, N., Bales, M. E., Merrill, J. A., Yoon, S., Woollen, J., &amp; Bakken, S. (n.d.). <a href="http://doi.org/10.1093/jamia/ocv079">Sometimes More Is More: Iterative participatory design of infographics for engagement of community members with varying levels of health literacy.</a> <a href="http://doi.org/10.1093/jamia/ocv079">http://doi.org/10.1093/jamia/ocv079</a></li> <li>2. Ryan LM, Solomon BS, Ziegfeld S, Gielen A, Malloy L, Foster D, Smith KC, McDonald E. (2019). Promoting bike helmet safety for urban children through a culturally tailored educational video intervention Health Promot. Pract. Doi: 10.1177/1524839918822271</li> <li>1. You Make the Call: Bike Helmet Safety: <a href="https://www.youtube.com/watch?v=C8qp8KZbqrM">https://www.youtube.com/watch?v=C8qp8KZbqrM</a></li> </ol> <p><b>In Class Hands-on Activities</b></p> <ol style="list-style-type: none"> <li>1. Practice visualizations with Canva and/or Adobe Spark and video editing with Adobe Spark or Premiere Rush</li> </ol> <p><b>Homework Assignment</b></p> <ol style="list-style-type: none"> <li>1. Final Project Progress Report Due</li> <li>2. Follow-Up Assignment – Your choice: Create an infographic or a short video with narration (&lt;=1 minute) about any health-related topic, including your final project topic. It is OK if your video will become part of your final project.</li> </ol>
11/26	Module 14: Work on Final Project/Thanksgiving
12/3	<p>Module 15: GIS mapping/Project Management</p> <p><b>Learning Outcomes:</b></p> <ol style="list-style-type: none"> <li>1. Define geographic information systems;</li> <li>2. Distinguish between various GIS strategies used in public health practice;</li> <li>3. Choose the appropriate mapping strategy given a set of public health data;</li> <li>4. Generate at least two different types of GIS maps from data provided.</li> </ol> <p><b>Lecture / Discussion Topics:</b></p> <ol style="list-style-type: none"> <li>1. What is GIS?</li> <li>2. What kinds of data is needed for GIS?</li> <li>3. How can a freely available tool be used to map health data?</li> </ol> <p><b>Required Readings:</b></p> <ol style="list-style-type: none"> <li>1. Romanski, J., Wu, W., Anderson, P. J., Austin, P. C., &amp; Rochon, P. A. (2015). <a href="http://doi.org/10.1093/ageing/afu203">Visualising the distribution of individuals of advanced age in Canada: linking census data to maps.</a> <i>Age and Ageing</i>, 44(3), 511–514. <a href="http://doi.org/10.1093/ageing/afu203">http://doi.org/10.1093/ageing/afu203</a> (Links to an external site.)</li> <li>2. Nelson, T.A., Denouden, T., Jestico, B., Laberee, K., Winters, M. (2015). <a href="http://dx.doi.org/10.1093/fph/kfv001">BikeMaps.org: A global tool for collision and near miss mapping.</a> <i>Frontiers in public health</i>, 3(15)1-8.</li> <li>3. Glegg, S. M. N., Ryce, A., &amp; Brownlee, K. (2019). <a href="https://doi.org/10.1016/j.evalprogplan.2018.09.005">A visual management tool for program planning, project management and evaluation in paediatric health care.</a> <i>Eval Program Plann</i>, 72, 16-23. doi:10.1016/j.evalprogplan.2018.09.005</li> </ol>

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4. Hysa, B., & Spalek, S. (2019). [Opportunities and threats presented by social media in project management](#). Heliyon, 5(4), e01488. doi:10.1016/j.heliyon.2019.e01488

**In Class Hands-on Activities:**

1. Create a point-based and polygon density maps using Tableau
2. Experiment with setting up a project using Teamwork

**Homework Assignment**

1. Create a map showing public health data. Publish a brief description of your map's purpose on the course Facebook group along with a link to or image of your map.