

# PUBH 6025, SECTION 001

Designing e-Interventions for Public Health  
Spring 2019

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## COURSE & CONTACT INFORMATION

**Credits:** 2

**Meeting Day(s):** Mondays

**Meeting Time:** 1:25pm to 3:20pm

**Meeting Place:** Mayo Building 1250

**Instructor:** Keith Horvath, PhD (pronouns:he/him/his)

**Email:** horva018@umn.edu

**Office Phone:** 612-626-1799

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**Office Hours:** by appointment

**Office Location:** 393 West Bank Office Building (WBOB)

## COURSE DESCRIPTION

The use of technology for public health recruitment, assessment, and intervention has grown dramatically since the introduction of the Internet and adoption of smartphones. Technology provides both opportunities for public health research and practice and challenges in adoption, adaptation, and implementation. This purpose of this course is to provide an overview of ways technology may be used as a recruitment, assessment, and intervention tool in public health research and practice. Students will gain a greater understanding of core design principles, the opportunities and challenges associated with different technologies, and practical strategies for designing and managing technology-based public health interventions and programs. At the conclusion of the course, students should have basic understanding of e-Health approaches to choose the appropriate technology before embarking on a public health research or practice project, basic skills for designing a technology-based public health intervention, and best practices for assembling and managing a team to successfully build and implement a technology-delivered project.

## COURSE PREREQUISITES

MPH students, PhD students, or other graduate students (or permission of the instructor)

## COURSE GOALS & OBJECTIVES

The goals of the course include:

1. Increase understanding of ways that technology may be used for recruitment, assessment, and intervention in public health research and practice.
2. Promote understanding of core design principles that can be applied to technology-based public health intervention and programs.
3. Provide students with greater insights into the opportunities and challenges that accompany different forms of technologies (e.g., online, smartphone) for use in public health research and practice.
4. Provide students with basic design skills to develop and plan an e-health intervention.
5. Provide students with practical project management strategies to oversee studies or interventions that include a technology component.

## METHODS OF INSTRUCTION AND WORK EXPECTATIONS

### Course Workload Expectations

PubH 6025 is a 2 credit course. The University expects that for each credit, you will spend a minimum of three hours per week attending class or comparable online activity, reading, studying, completing assignments, etc. over the course of a 15-week term. This is a 2-credit course and, therefore, students can expect to spend approximately 6 hours per week outside of class preparing for class discussions, assignments, and quizzes.

Researchers, developers, and technology experts will be invited to give presentations that address concepts discussed in class. Students are expected to attend class, complete reading assignments, participate in class discussions, complete homework on time, and contribute to an atmosphere of curiosity and learning.

### Learning Community

School of Public Health courses ask students to discuss frameworks, theory, policy, and more, often in the context of past and current events and policy debates. Many of our courses also ask students to work in teams or discussion groups. We do not come to our courses with identical backgrounds and experiences and building on what we already know about collaborating, listening, and engaging is critical to successful professional, academic, and scientific engagement with topics.

In this course, students are expected to engage with each other in respectful and thoughtful ways.

In group discussion, this can mean:

- Respecting the identities and experiences of your classmates.
- Avoid broad statements and generalizations. Group discussions are another form of academic communication and responses to instructor questions in a group discussion are evaluated. Apply the same rigor to crafting discussion posts as you would for a paper.
- Consider your tone and language, especially when communicating in text format, as the lack of other cues can lead to misinterpretation.

Like other work in the course, all student to student communication is covered by the Student Conduct Code (<https://z.umn.edu/studentconduct>).

## COURSE TEXT & READINGS

The required course textbook is:

Brown, D. M. (2010). *Communicating Design: Developing Web Site Documentation for Design and Planning* (2nd ed.). New Riders Publishers: Berkeley, CA.

Additional readings and handouts, including scientific studies and other articles from peer-review journals and other public health publications, will be assigned during the course. Links to assigned readings will be posted on the Canvas course web site (see below), which students are expected to check regularly. Assigned journal articles can also be downloaded from the university libraries website (<https://www.lib.umn.edu>). **If you have problems accessing the course website or materials, please contact the course instructor by 12:00 p.m. (noon) on Friday since he may not be available to assist you on weekends.**

## COURSE OUTLINE/WEEKLY SCHEDULE

Week	Topic	Readings	Activities/Assignments
Week 1: 1/28	Course Overview, e-Health Opportunities and Challenges, & Technology Acceptance Model	<ul style="list-style-type: none"> <li>• Course Textbook Reading: Bull, S. (2011): Chapter 1</li> <li>• Additional Reading: Ryan C, Bergin M, Wells JS. Theoretical Perspectives of Adherence to Web-Based Interventions: a Scoping Review. <i>Int J Behav Med.</i> 2018 Feb;25(1):17-29.</li> </ul>	<ul style="list-style-type: none"> <li>• In-class Activity: None</li> <li>• Assignments Due: None</li> </ul>
Week 2: 2/4	User-Centered Design	<ul style="list-style-type: none"> <li>• Course Textbook Reading: None</li> <li>• Additional Readings: <ul style="list-style-type: none"> <li>• Hardy A, Wojdecka A, West J, Matthews E, Golby C, Ward T, Lopez ND, Freeman D, Waller H, Kuipers E, Bebbington P, Fowler D, Emsley R, Dunn G, Garety P. How Inclusive, User-Centered Design Research Can Improve Psychological Therapies for Psychosis: Development of SlowMo. <i>JMIR Ment Health.</i> 2018 Dec 5;5(4):e11222.</li> <li>• Lowdermilk, T. (2013). <i>User-Centered Design – A Developer’s Guide to Building User-Friendly Applications.</i> O’Reilly Publishers, Cambridge, United Kingdom. <ul style="list-style-type: none"> <li>• Chapter 2</li> <li>• Chapter 7</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• In-class Activity: None</li> <li>• Assignments Due: None</li> </ul>
Week 3: 2/11	Design Workshop	<ul style="list-style-type: none"> <li>• Course Textbook Reading: None</li> <li>• Additional Reading: Review <a href="https://designsprintkit.withgoogle.com/introduction/overview">https://designsprintkit.withgoogle.com/introduction/overview</a></li> </ul>	<ul style="list-style-type: none"> <li>• In-Class Activity: Peer Feedback 1 &amp; Crazy 8s/Solution Sketch</li> <li>• Assignments Due: Project Ideas Assignment @ 1:25pm on 2/11/2019</li> </ul>
Week 4: 2/18	Reaching your Target Audience	<ul style="list-style-type: none"> <li>• Course Textbook Reading: None</li> <li>• Additional Readings: <ul style="list-style-type: none"> <li>• Akers L, Gordon JS. Using Facebook for Large-Scale Online Randomized Clinical Trial Recruitment: Effective Advertising Strategies. <i>J Med Internet Res.</i> 2018 Nov 8;20(11):e290</li> <li>• Watson B, Robinson DH, Harker L, Arriola KR. The Inclusion of African American Study Participants in Web Based Research Studies: Viewpoint. <i>J Med Internet Res.</i> 2016 Jun 22;18(6):e168</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• In-Class Activity: Recruitment and retention of diverse populations</li> <li>• Assignments Due: None</li> </ul>

<b>Week 5: 2/25</b>	<b>Analyze Phase: Personas</b>	<ul style="list-style-type: none"> <li>• Course Textbook Readings: Brown, D.M. (2010): Chapters 1, 2, &amp; 3</li> <li>• Additional Reading: None</li> </ul>	<ul style="list-style-type: none"> <li>• In-Class Activity: Designing Personas</li> <li>• Assignments Due: Project Concept Paper @ 11:59pm on 2/25/2019</li> </ul>
<b>Week 6: 3/4</b>	<b>Analyze Phase: Journey Mapping and Process Flow</b>	<ul style="list-style-type: none"> <li>• Course Textbook Reading: Brown, D.M. (2010): Chapter 4</li> <li>• Additional Reading: None</li> </ul>	<ul style="list-style-type: none"> <li>• Guest Lecture: Mary Polding from Vidscrip</li> <li>• In-Class Activities: Peer Feedback 2 &amp; Designing Journey Maps</li> <li>• Assignments Due: None</li> </ul>
<b>Week 7: 3/11</b>	<b>Design Phase: Site Maps, Flowcharts, and Wireframes</b>	<ul style="list-style-type: none"> <li>• Course Textbook Readings: Brown, D.M. (2010): Chapters 5, 6, &amp; 7</li> <li>• Additional Reading: None</li> </ul>	<ul style="list-style-type: none"> <li>• In-Class Activity: Designing Wireframes</li> <li>• Assignments Due: Personas @ 11:59pm on 3/11/2019</li> </ul>
<b>Week 8: 3/25</b>	<b>mHealth Interventions</b>	<ul style="list-style-type: none"> <li>• Course Textbook Reading: None</li> <li>• Additional Readings: <ul style="list-style-type: none"> <li>• Horvath, K.J., Ecklund, A., Hunt, S., Nelson, T., &amp; Toomey, T. Developing Internet-based Health Interventions: A Guide for Public Health Researchers and Practitioners. <i>J Med Internet.</i> 17(1): e28.</li> <li>• YouTHrive protocol paper</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• In-Class Activity: Peer Feedback 3</li> <li>• Assignments Due: None</li> </ul>
<b>Week 9: 4/1</b>	<b>Developing mHealth Interventions from a Developer's Perspective</b>	<ul style="list-style-type: none"> <li>• Course Textbook Reading: None</li> <li>• Additional Reading: None</li> </ul>	<ul style="list-style-type: none"> <li>• Guest Lecture: Casey Helbing, Founder of Software for Good</li> <li>• In-Class Activity: None</li> <li>• Assignments Due: Wireframes @ 11:59pm on 4/1/2019</li> </ul>
<b>Week 10: 4/8</b>	<b>Usability Testing</b>	<ul style="list-style-type: none"> <li>• Course Textbook Readings: Brown, D.M. (2010): Chapters 11 &amp; 12</li> <li>• Additional Reading: None</li> </ul>	<ul style="list-style-type: none"> <li>• In-Class Activity: Designing a Usability Plan</li> <li>• Assignments Due: None</li> </ul>
<b>Week 11: 4/15</b>	<b>Human Subjects, Ethics, and Data Privacy in Technology-Based Research and Practice</b>	<ul style="list-style-type: none"> <li>• Course Textbook Reading: None</li> <li>• Additional Reading: Internet-based Research Interventions: Suggestions for Minimizing Risk. National Institute of Mental Health. 2007.</li> </ul>	<ul style="list-style-type: none"> <li>• In-Class Activity: Peer Feedback 4 &amp; Human Subjects Dilemmas</li> <li>• Assignments Due: None</li> </ul>

<b>Week 12: 4/22</b>	<b>Survey and Assessment using Technology</b>	<ul style="list-style-type: none"> <li>• <b>Course Textbook Reading: None</b></li> <li>• <b>Additional Readings:</b> <ul style="list-style-type: none"> <li>• Tuttas, C.A. Lessons learned using web conference technology for online focus group interviews. <i>Qualitative Health Research</i> 2015; 25(1): 122-133.</li> <li>• <b>Review:</b> <a href="https://www.qualtrics.com/support/survey-platform/survey-module/survey-module-overview/">https://www.qualtrics.com/support/survey-platform/survey-module/survey-module-overview/</a></li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>In-Class Activity: Designing an Online Survey using Qualtrics</b></li> <li>• <b>Assignments Due: Usability Interview Guide @ 11:59pm on 4/22/2019</b></li> </ul>
<b>Week 13: 4/29</b>	<b>Survey and Assessment using Technology (cont.) &amp; Wrap-up</b>	<ul style="list-style-type: none"> <li>• <b>Course Textbook Reading: None</b></li> <li>• <b>Additional Reading: None</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>In-Class Activity: Designing an Online Survey using Qualtrics</b></li> <li>• <b>Assignments Due: None</b></li> </ul>
<b>Week 14: 5/6</b>	<b>N/A</b>	<ul style="list-style-type: none"> <li>• <b>N/A</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Assignments Due: Project Presentation Due @ 1:25pm on 5/6/2019</b></li> </ul>
<b>Week 15: 5/13</b>	<b>N/A</b>	<ul style="list-style-type: none"> <li>• <b>N/A</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Assignments Due: FINAL PORTFOLIO Due @ 11:59pm on 5/13/2019</b></li> </ul>

## SPH AND UNIVERSITY POLICIES & RESOURCES

The School of Public Health maintains up-to-date information about resources available to students, as well as formal course policies, on our website at [www.sph.umn.edu/student-policies/](http://www.sph.umn.edu/student-policies/). Students are expected to read and understand all policy information available at this link and are encouraged to make use of the resources available.

The University of Minnesota has official policies, including but not limited to the following:

- Grade definitions
- Scholastic dishonesty
- Makeup work for legitimate absences
- Student conduct code
- Sexual harassment, sexual assault, stalking and relationship violence
- Equity, diversity, equal employment opportunity, and affirmative action
- Disability services
- Academic freedom and responsibility

Resources available for students include:

- Confidential mental health services
- Disability accommodations
- Housing and financial instability resources
- Technology help
- Academic support

## EVALUATION & GRADING

**Assignments 2, 3, 4, 5, and 7 below must be submitted as a PDF file(s)** (unless otherwise stated in the assignment instructions). All assignments must be uploaded to the Canvas course website. Final Grades for the class will be calculated based on performance in the following areas:

### Peer Feedback Sessions (8% of grade):

You will have the opportunity to gain peer feedback on your assignment the week before each assignment is due. Peer feedback is a valuable way to gain insight into the potential strengths and weaknesses of your approach. You will be randomly paired with a peer, who will provide feedback on your assignments. Making up missed peer feedback sessions is only possible if more than one student is absent during that class. If more than one student is absent, they will be able to review each other's work. Otherwise, if only one student is absent during peer feedback, it is not possible to make up those points. Your participation in these peer feedback session will constitute 8% of your final grade.

### Assignment 1: Project Ideas (3% of final grade):

You will bring to class 3 ideas for your project. For each of the ideas, provide the following information: 1) What health behavior are you targeting?; 2) What is your target populations; 3) What technology/ies will you use to deliver the intervention?; 4) What are 2-3 of the most important features of the intervention/program?; 5) How unique is this with respect to existing programs /interventions? Be prepared to discuss your ideas with two classmates to help you choose which idea to use for your project.

### Assignment 2: Project Concept Paper (30% of final grade):

You will be asked to provide a concept sheet for your project. The project concept paper will be used to provide information about your proposed intervention in the following areas: a) What public health topic you are addressing?; b) What is the significance of the proposed project in context of existing literature?; c) What is the innovation of your proposed project with respect to the benefits of technology-based health promotions; d) What is the proposed intervention, and what approach will you take to develop it?; e) What are the limitations and challenges to the proposed intervention? The paper should be between 10-15 pages **double spaced**.

### Assignment 3: Personas (12% of final grade):

Following recommendations provided in the course textbook (by Brown), create 3 personas that represent typical users of your intervention. Personas should represent potential users of the intervention, and be sufficiently developed to guide the development of the project site map and wireframes. The paper should be 3 pages.

### Assignment 4: Wireframes (12% of final grade):

Wireframes are a simplified (either paper and pencil or using a computer graphics tool) view of what content should appear on a screen of your intervention. This tells the intervention and design teams what information and graphics should be included on that page of your

intervention, as well as the layout of that particular screen. Following recommendations provided in the course textbook (see Chapter 7 in Dan Brown's book), develop wireframes for 3 substantive page of your intervention. Wireframes should include a sketch of the page (1 page per wireframe). On a separate page, describe the elements included on each of your wireframes page and the purpose that each feature serves (for example, describing how that feature fits in with your overall intervention, or if that feature is there to provide visual interest or engagement). The paper should be 1 page.

Assignment 5: Usability Interview Guide (10% of final grade):

Usability testing is an essential part of the design process by receiving feedback from users to refine and (eventually) finalize your intervention/program before it is released. In this assignment, you will develop a usability plan for one type of user groups. Your plan will include the timing, setting, equipment, instructions to participants, scenario/task lists, and assessment plan.

Assignment 6: Project Presentation (10% of final grade):

A round-robin style presentation day will allow students to showcase their work to peers in an informal context. Each student will give brief (10 minutes) Power Point (or equivalent) presentation of their portfolio to their classmates (likely using a laptop). Groups will consist of 3-4 members. After each member of a group has finished giving their presentation, a second group of new members will be assembled and the presentation given once more. *If you know that you will be absent during the presentation day (i.e., the last day of class), you must present your project to the class in the previous week (i.e., the second to last day of class).*

Assignment 7: Project Portfolio (15% of final grade):

The final project will be the all of the assignments (Project Concept Paper, Personas, Journey Map and Wireframes), plus a description of the team members who should be included in intervention/ program development, a usability testing plan, and a discussion of the ethical/human subjects issues. Based on students' evolving thinking on their project, as well as feedback from peers and the instructor, students are encouraged to edit to improve previous assignments. In addition, new components (intervention/program team members, usability testing, ethical/human subjects issues) should be added to the revised Project Concept Paper. The goal of the final project is to have a final, polished portfolio that demonstrates students' experiences and understanding of technology-based intervention/program development and implementation based on their chosen intervention/program.

**Grading Scale**

The University uses plus and minus grading on a 4.000 cumulative grade point scale in accordance with the following, and you can expect the grade lines to be drawn as follows:

% In Class	Grade	GPA
93 - 100%	A	4.000
90 - 92%	A-	3.667
87 - 89%	B+	3.333
83 - 86%	B	3.000
80 - 82%	B-	2.667
77 - 79%	C+	2.333
73 - 76%	C	2.000
70 - 72%	C-	1.667
67 - 69%	D+	1.333
63 - 66%	D	1.000
< 62%	F	

- A = achievement that is outstanding relative to the level necessary to meet course requirements.
- B = achievement that is significantly above the level necessary to meet course requirements.
- C = achievement that meets the course requirements in every respect.

- D = achievement that is worthy of credit even though it fails to meet fully the course requirements.
- F = failure because work was either (1) completed but at a level of achievement that is not worthy of credit or (2) was not completed and there was no agreement between the instructor and the student that the student would be awarded an I (Incomplete).
- S = achievement that is satisfactory, which is equivalent to a C- or better
- N = achievement that is not satisfactory and signifies that the work was either 1) completed but at a level that is not worthy of credit, or 2) not completed and there was no agreement between the instructor and student that the student would receive an I (Incomplete).

Evaluation/Grading Policy	Evaluation/Grading Policy Description
<p><b>Scholastic Dishonesty, Plagiarism, Cheating, etc.</b></p>	<p>You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis (As defined in the Student Conduct Code). For additional information, please see <a href="https://z.umn.edu/dishonesty">https://z.umn.edu/dishonesty</a></p> <p>The Office for Student Conduct and Academic Integrity has compiled a useful list of Frequently Asked Questions pertaining to scholastic dishonesty: <a href="https://z.umn.edu/integrity">https://z.umn.edu/integrity</a>.</p> <p>If you have additional questions, please clarify with your instructor. Your instructor can respond to your specific questions regarding what would constitute scholastic dishonesty in the context of a particular class-e.g., whether collaboration on assignments is permitted, requirements and methods for citing sources, if electronic aids are permitted or prohibited during an exam.</p> <p>Indiana University offers a clear description of plagiarism and an online quiz to check your understanding (<a href="http://z.umn.edu/iuplagiarism">http://z.umn.edu/iuplagiarism</a>).</p>
<p><b>Late Assignments</b></p>	<p>Assignments handed in late (without permission by instructor or proof of medical emergency) will be penalized by subtracting 5% points off of the grade for each day late (excluding weekends). Late assignments will be accepted up to 2 weeks after the due date, after which a 0% for that assignment will be given.</p>
<p><b>Attendance Requirements</b></p>	<p>There are no attendance requirements. However points for peer feedback sessions are given to students who attend class. Making up missed peer feedback sessions is only possible if more than one student is absent during that class. If more than one student is absent, they (the students who missed the class) will be able to review each other's work. Otherwise, if only one student is absent during peer feedback, it is not possible to make up those points.</p>
<p><b>Extra Credit</b></p>	<p>Extra credit is not offered in this course. Students' final grades will be calculated based on their performance on class assignments.</p>