SI 554 / HBHE 654: Consumer Health Informatics

University of Michigan School of Information
Winter 2018: Tuesdays, 5:30-8:30 pm
1255 NQ

INSTRUCTOR: Michelle Williams, MHI

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<thead>
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<th>Phone</th>
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</thead>
<tbody>
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COURSE OVERVIEW

Consumer Health Informatics (CHI) is a rapidly-expanding area of informatics practice, with career opportunities emerging in the public, non-profit, and private sectors. Broadly, the field aims to give individual health care consumers, as well as their families and communities, the information and tools that they need to help them become more involved in their health and health care. The focus is on information structures and processes that empower self-management of health, such as health information literacy, consumer-friendly language, personal health records, and Internet-based strategies. This course aims to familiarize students with a range of CHI applications, including the needs/problems that the applications address, their theoretical bases, their design, and their relevant evaluation results. Students should acquire an ability to evaluate existing applications, and to generate theory-informed design and implementation strategies for CHI applications. Students will also learn to assess the needs and technological practices of potential users, with a particular focus on groups that experience health and information access disparities.

LEARNING OBJECTIVES

1. Compare and evaluate a range of consumer health informatics (CHI) applications.
2. Assess consumers’ health-related needs, resources and technology-oriented practices, and evaluate their implications for CHI applications.
3. Develop guidelines and recommendations for addressing identified needs using consumer technologies.
4. Develop a commitment to CHI practice with diverse user groups.

HBHE COMPETENCIES
This course provides training towards the following HBHE competencies:

2f) Understand the merits of using theory to inform interventions and their evaluation in public health.
5c) Apply evidence-based approaches to the development and evaluation of public health programs.
6d) Design, implement, and evaluate culturally appropriate interventions for diverse individuals and communities

COURSE RESOURCES

There are assigned readings drawn from a range of sources. Course readings and other resources are delivered via the University of Michigan Canvas course management system (or the World Wide Web). The Resources folder in Canvas contains copies of the weekly course readings, located in subfolders labelled by week number.

Separate Canvas folders include tools for submitting assignments and other facilities. The most current copy of this document, the Course Syllabus, also resides on the Canvas site. Canvas maintains an archive of all email messages sent to the entire class.

All course materials are provided in electronic form under the "fair use" copyright exemption. This means that you may not redistribute copies of class readings outside the class. For more information, see "Copyright at the University of Michigan: For Students."

OVERVIEW OF ASSIGNMENTS

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Class #</th>
<th>Due Date</th>
<th>Value (% of final grade)</th>
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</thead>
<tbody>
<tr>
<td>CHI Application Critique (Individual Assignment)</td>
<td>Class 6</td>
<td>February 20, 5:00pm via Canvas</td>
<td>20%</td>
</tr>
<tr>
<td>Designing for Diversity Project- Presentation (Group Assignment – Part 1)</td>
<td>Class 9 or 10</td>
<td>March 20 or 27 In-Class</td>
<td>20%</td>
</tr>
<tr>
<td>Designing for Diversity Project – Write-Up (Group Assignment- Part 2)</td>
<td>Class 9 or 10</td>
<td>March 20 5:00pm via Canvas</td>
<td></td>
</tr>
<tr>
<td>Lighting Talk: a new CHI intervention/application (Group Assignment- Part 1)</td>
<td>Class 13</td>
<td>April 17 In-Class</td>
<td>50%</td>
</tr>
<tr>
<td>Needs Assessment, gap analysis and proposal for a new CHI intervention/application (Group Assignment- Part 2)</td>
<td>N/A</td>
<td>April 20 5:00pm via Canvas</td>
<td></td>
</tr>
<tr>
<td>Participation</td>
<td>Class 13</td>
<td>April 20 5:00pm via Canvas</td>
<td>10%</td>
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ASSIGNMENT FORMAT

Assignments should be written in a 12-point font on letter-sized paper with one inch margins. All papers should be double-spaced. If citations are included, please use American Psychological Association (APA) style guidelines for citing materials used in your assignments. The style guide can be found online at: http://owl.english.purdue.edu/owl/resource/560/01/.

Please submit your assignments in Microsoft Word format. Please name your Word file beginning with your surname (e.g., Williams_CHI_Application_Critique.docx). For group assignments, please use surname(s) in alphabetical order, followed by the assignment title (e.g., Rajendran_Williams_CHI_Application_Critique.docx).

LATE ASSIGNMENTS

Assignments that are submitted late will lose 2/3 of a letter grade on the first day that an assignment is late. After that, 1/3 of a letter grade will be deducted for each day the assignment is late, up to two whole letter grades. Students may request an extension but they must contact me 24 hours in advance and give a valid reason why they are late.

GRADE RECONSIDERATION

I will make every effort to apply grading criteria objectively and fairly. However, if you believe the grade you received on an assignment is inappropriate, you may ask to have your grade reconsidered. To do so, you must explain in an email to the instructor why you feel your work deserves re-grading. You should provide details and point to specifics in the assignment that you feel merit a higher grade. Requesting a grade reconsideration does not ensure that your grade will change, but your arguments will be carefully considered. Note: one of three outcomes are possible: your grade may be raised, it may remain the same, or it may be lowered.

GRADING

Drawing from the Master’s Student Handbook, all assignments will be graded as follows:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Points</th>
<th>Interpretation</th>
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<tbody>
<tr>
<td>A+</td>
<td>90-100</td>
<td>Extraordinary achievement. Rarely given.</td>
</tr>
<tr>
<td>A</td>
<td>85-89</td>
<td>Consistently distinguished performance in all course aspects, such qualities as analytical ability, creativity, and originality are exhibited at a very high level.</td>
</tr>
<tr>
<td>A-</td>
<td>80-84</td>
<td>Strong, solid achievement in most aspects of the work.</td>
</tr>
<tr>
<td>B+</td>
<td>77-79</td>
<td>Good performance. Consistent with performance expected of students in a graduate degree program.</td>
</tr>
<tr>
<td>B</td>
<td>73-76</td>
<td>Acceptable.</td>
</tr>
<tr>
<td>B-</td>
<td>70-72</td>
<td>Borderline.</td>
</tr>
<tr>
<td>C+</td>
<td>67-69</td>
<td>Poor performance. This is a marginal grade which alerts students to their limited performance in a particular course.</td>
</tr>
<tr>
<td>C</td>
<td>63-66</td>
<td>Very poor performance.</td>
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</tbody>
</table>
COURSE POLICIES

Academic Integrity
Unless otherwise specified in an assignment all submitted work must be your own, original work. Any excerpts, statements, or phrases from the work of others must be clearly identified as a quotation, and a proper citation provided. Any violation of the School’s policy on Academic and Professional Integrity (stated in the Master’s and Doctoral Student Handbooks) will result in serious penalties, which might range from failing an assignment, to failing a course, to being expelled from the program. Violations of academic and professional integrity will be reported to UMSI Student Affairs. Consequences impacting assignment or course grades are determined by the faculty instructor; additional sanctions may be imposed by the Assistant Dean for Academic and Student Affairs.

Accommodations for Students with Disabilities
If you think you need an accommodation for a disability, please let me know at your earliest convenience. Some aspects of this course, the assignments, the in-class activities, and the way we teach may be modified to facilitate your participation and progress. As soon as you make me aware of your needs, we can work with the Office of Services for Students with Disabilities (SSD) to help us determine appropriate accommodations. SSD (734-763-3000; ssd.umich.edu/) typically recommends accommodations through a Verified Individualized Services and Accommodations (VISA) form. I will treat any information that you provide in as confidential a manner as possible.

Student Mental Health and Wellbeing
The University of Michigan is committed to advancing the mental health and wellbeing of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, contact Counseling and Psychological Services (CAPS) at (734) 764-8312 and https://caps.umich.edu/ during and after hours, on weekends and holidays, or through its counselors physically located in schools on both North and Central Campus. You may also consult University Health Service (UHS) at (734) 764-8320 and https://www.uhs.umich.edu/mentalhealthsvcs, or for alcohol or drug concerns, see www.uhs.umich.edu/aodresources.

For a listing of other mental health resources available on and off campus, visit: http://umich.edu/~mhealth/

Acknowledgements. Thank you to Johmarx Patton, MD, MHI for his assistance in preparing this syllabus.
COURSE SCHEDULE

Class 1 (Jan.9) – Course Introduction

Learning Objectives:
- Compare and evaluate a range of consumer health informatics (CHI) applications.
- Develop guidelines and recommendations for addressing identified needs using consumer technologies.

CLASS PREPARATION

Theory and Research


Cases/Examples


Discussion Question(s):
- What are the major types of consumer health informatics (CHI) applications?
- What impacts have CHI applications had, and for whom?

Class 2 (Jan. 16) – Health behavior change, part 1 (Theory of Planned Behavior/Integrated Behavioral Model)

Learning Objectives:
- Compare and evaluate a range of consumer health informatics (CHI) applications.
- Develop guidelines and recommendations for addressing identified needs using consumer technologies.

CLASS PREPARATION

Theory and Research


Techniques

**Cases/Examples**

**Get Active!**

OR

**Computerized Simulation in Promoting Walking in Individuals with Diabetes**
  - To see the Simulation, see Multimedia Appendix 1 and Multimedia Appendix 2.

**Study Question(s):**
- How can one apply the Theory of Reasoned Action (TRA)/Theory of Planned Behavior (TPB)/Integrated Behavioral Model (IBM) to the design of consumer health informatics applications?
- How was this accomplished in the case studies?
- Was this accomplished in the application we analyzed in-class?
Class 3 (Jan. 23) – *Health behavior change, part 2 (Socio-cognitive theory)*

Learning Objectives:

- Compare and evaluate a range of consumer health informatics (CHI) applications.
- Develop guidelines and recommendations for addressing identified needs using consumer technologies.

CLASS PREPARATION

Theory and Research

Techniques

Cases/Examples
*Watch, Discover, Think, and Act*
- *Watch, Discover, Think, Act Screens* [Slide deck]

OR

*Text2Quit*
- Text2Quit application: [http://www.text2quit.com](http://www.text2quit.com)

Study Question(s):

- How can one apply Socio-cognitive theory (SCT) to the design of consumer health informatics applications?
- How was the above accomplished in the case study?
Learning Objectives:

- Compare and evaluate a range of consumer health informatics (CHI) applications.
- Develop guidelines and recommendations for addressing identified needs using consumer technologies.

CLASS PREPARATION

Theory and Research


Techniques


Cases/Examples

“It’s LiFe!”


OR

ManUp

- Video tour of ManUp Intervention: http://www.youtube.com/watch?v=m14DamHndI8

Study Question(s):

- How can one apply Self-Regulation Theory (SRT) and goal setting to the design of consumer health informatics applications?
- How was this accomplished in the case study?
Class 5 (Feb. 6) – Health behavior change, part 4 (Games for Health)

Learning Objectives:
- Compare and evaluate a range of consumer health informatics (CHI) applications.
- Develop guidelines and recommendations for addressing identified needs using consumer technologies.

CLASS PREPARATION

Theory and Research


Techniques

Cases/Examples

OR


Study Question(s):
- How can one apply gamification principles to the design of consumer health informatics applications? How was this accomplished in the case studies?

Class 6 (Feb. 13) – Awareness and Feedback, part 1 (Self-monitoring)

- Assignment due: CHI application critique (20%)

Learning Objectives:
- Compare and evaluate a range of consumer health informatics (CHI) applications.
- Assess consumers’ health-related needs, resources and technology-oriented practices, and evaluate their implications for CHI applications.
- Develop guidelines and recommendations for addressing identified needs using consumer technologies.
CLASS PREPARATION
Theory and Research


Techniques

Cases/Examples
MONARCA

Study Question(s):
- For consumers and patients, what are the effects of self-monitoring?
Class 7 (Feb. 20) – Awareness and Feedback, part 2 (Remote monitoring)
Guest Speaker: Michael Hess, ActiveU, University of Michigan

Learning Objectives:
• Compare and evaluate a range of consumer health informatics (CHI) applications.
• Assess consumers’ health-related needs, resources and technology-oriented practices, and evaluate their implications for CHI applications.
• Develop guidelines and recommendations for addressing identified needs using consumer technologies.

CLASS PREPARATION

Theory and Research

Techniques

Cases/Examples
Scherr, et. al. (2009). Effect of home-based tele-monitoring using mobile phone technology on the outcome of heart failure patients after an episode of acute decompensation: Randomized controlled trial. Journal of Medical Internet Research, 11(3), e34. doi:10.2196/jmir.1252

OR


Study Question(s):
• What new possibilities do sensor-based technologies introduce for CHI applications?

Feb 27 – NO CLASS – Spring Break

Class 8 (Mar. 6) – Awareness and Feedback, part 3 (Personal Health Records)
Guest Speaker: Rachel Abbey, ONC Public Health Analyst, Emergency Response Preparedness and the consumer

Learning Objectives:
• Compare and evaluate a range of consumer health informatics (CHI) applications.
• Assess consumers’ health-related needs, resources and technology-oriented practices, and evaluate their implications for CHI applications.
CLASS PREPARATION

Theory and Research


Cases/Examples

Study Question(s):
- Describe how (or how not) Microsoft HealthVault’s functionality might meet consumers’ needs.
Class 9 (Mar.13) – Designing CHI for Diverse Populations

Guest speaker- Steve Ondersman, PhD, Wayne State University: High-Tech High-Touch (HT2)

CLASS PREPARATION

Theory and Research

http://www.tandfonline.com/doi/full/10.3109/17538157.2014.948171#aHR0cDovL3d3dy50YW5kZm9ubGluZS5jb20vZG9pL3BkZi8xMC4zMTA5LzE3NTM4MTU3LjIwMTQuOTQ4MTcxP25lZWRBY2Nlc3M9dHJ1ZUBAQDA=


Cases/Examples

Dietary Intake Monitoring Application (DIMA)

Class 10 (Mar.20) – *Designing CHI for Diverse Populations, presentations (1)*

- **Assignment due:** Designing for Diversity presentations (20%)

**Learning Objectives:**
- Develop guidelines and recommendations for addressing identified needs using consumer technologies.
- Develop a commitment to CHI practice with diverse user groups.

**CLASS PREPARATION**

**Techniques**
Class 11 (Mar. 27) – *Designing CHI for Diverse Populations, presentations (2)*

**Theory and Research**


**Techniques**

**Cases/Examples**
Class 12 (Apr. 3) – *Online social networks and community informatics, (e-Communities, Social networks and social support)*

*Learning Objectives:*
- Assess consumers’ health-related needs, resources and technology-oriented practices, and evaluate their implications for CHI applications.
- Develop guidelines and recommendations for addressing identified needs using consumer technologies.

**CLASS PREPARATION**

*Theory and Research*


*Techniques*

*Cases/Examples*

**HealthWeaver**

**OR**

**PatientsLikeMe**
- Frost, J. H., & Massagli, M. P. (2008). Social uses of personal health information within PatientsLikeMe, an online patient community: what can happen when patients have access to one another’s data. *Journal of Medical Internet Research*, 10(3).

**Study Question(s):**
- What is the range of technical possibilities for engaging one’s social network for support?
- How might peer-to-peer communication between patients benefit them? What potentially negative effects might there be, if any?

**Advanced Resources (Optional)**
Class 13 (Apr.10) – **Online social networks and community informatics, (Community health and health disparities)**

- **Assignment due:** CHI Intervention Lightning Talks

**Learning Objectives:**
- Assess consumers’ health-related needs, resources and technology-oriented practices, and evaluate their implications for CHI applications.
- Develop guidelines and recommendations for addressing identified needs using consumer technologies.
- Develop a commitment to CHI practice with diverse user groups.

**CLASS PREPARATION**

**Theory and Research**


**Techniques**

**Cases/Examples**
*I-Decide/Decido*

**Study Question(s):**
- What are the possibilities for technology to reduce or increase health disparities?
- What are the possibilities for use of geospatial data in CHI applications?

Class 14 (Apr.17)- The Future of Consumer Health Informatics

**Final wrap-up**

**Final Assignment Due April 20:** Needs Assessment, Gap Analysis, and proposal for a new CHI intervention/application
SUPPLEMENTARY Resources/Readings (NOT REQUIRED)

Week 1
Technology Background (Optional)
- Inside your computer (4:11) - https://www.youtube.com/watch?v=AkFi90lZmXA&index=16&list=PL45DD1CA57AA3122A
- How Does the Internet Work? (5:37) - https://www.youtube.com/watch?v=i5oe63pOhLI
- How Does Wi-Fi Work? (3:59) - https://www.youtube.com/watch?v=xmabFJUKMdg

Advanced Resources (Optional)


Week 2
Technology Background (Optional)
- Cell phone design (4:01): https://www.youtube.com/watch?v=z7r8sKzt7HM

Week 3
Technology Background (Optional)

Advanced Resources (Optional)

Week 4
Technology Background (optional)
- A Brief History of User Interface (ends at 9:49) - https://www.youtube.com/watch?v=vALW9fVOXHQ

Week 5
Technology Background (optional)
How it’s Made: Video Games (5:34) - https://www.youtube.com/watch?v=Y7RE8Spsa5s
Week 6
Technology Background (Optional)

Advanced Resources (Optional)

Week 7
Technology Background (Optional)
Introduction to Sensors - Macro and Micro-size (13:33): https://www.youtube.com/watch?v=kva5nDgJQ
Week 8
Technology Background (Optional)
An Introduction to XML: The Basics Part 1 (8:01) - https://www.youtube.com/watch?v=Q0k5ySZGPBc&list=FL_7oT1q4GCN-q1EOaxolqzw&index=6

Advanced Resources (Optional)
Overview of the Continuity of Care Record (CCR) XML Schema (9:49) - https://www.youtube.com/watch?v=w4Yb9zpZBCo

Week 9
Technology Background (Optional)
How Barcodes Work - https://www.youtube.com/watch?v=e6aR1k-ympo

Week 10
Advanced Resources (Optional)

Week 11
Advanced Resources (Optional)

Week 12
Advanced Resources (Optional)

Week 13
Technology Background (Optional)
How does your smartphone know your location? (5:02) - https://www.youtube.com/watch?v=70cDSUI4XKE

Advanced Resources (Optional)
Week 14


Home sensors enable seniors to live independently (2:46) - https://www.youtube.com/watch?v=NCixWY3eaOc

