Syllabus

Logistics

INFO 490PI, 4 Credits, Spring 2024
Lectures: T/Th 11:30am-12:45pm in Hasbrouck Lab Add room 113
Lab: Fr 12:20pm - 1:10pm in LGRC A301

Personnel

Instructor: **Ravi Karkar** - rkarkar@umass.edu

TA: **Sidharth Kaliappan** - skaliappan@umass.edu
Office hours: Tues 3-4pm (zoom)

Course Description

This course will cover the design of personal health and wellness technologies. Using the personal health informatics model, we will learn various challenges in designing technologies for personal health data collection (e.g., step count, heart rate, or food intake etc.), integration, self-reflection, and behavior change. Going further, students will understand design issues in sharing personal health data and discuss design guidelines for collaborative data collection, reflection, and care.

It is difficult to create health technologies that can successfully be integrated into people's daily life due to many obstacles in individuals' data collection, integration, self-reflection, and sharing practices. Understanding these challenges is an important part of designing Health Technologies. Therefore, this course will cover HCI and design thinking methods that students can leverage to understand the adoption and use of Health Technologies and to design effective Health Technologies. Moreover, visualizations facilitate people to gain insights from their data, so we will cover common visualization approaches used in the personal data contexts. Students will apply the design issues taught during lecture to a team-based semester-long personal health application design project.

On the successful completion of this course, students will be able to:

- Explain the goals of Personal Health Informatics and existing approaches to support those goals.
- Describe the issues and challenges of adopting and designing Personal Health Technologies.
- Discuss the roles of visualization in Personal Health Technologies
- Administer personal data collection and insight generation from their own data.
- Identify design problems in Personal Health Informatics and employ appropriate design methods to address the design problems.

Syllabus Change Policy

I reserve the right to make changes to this syllabus in order to maintain currency with the field or increase success for students.

Course Schedule

Weekly schedule at a glance:

Week	Topic	Readings	Deliverables
1	Introduction & mHealth and Applications	- Klasnja, P., & Pratt, W. (2012). Healthcare in the pocket: mapping the space of mobile-phone health interventions. Journal of biomedical informatics, 45(1), 184-198.	
2	Personal Informatics	- Li, I., Dey, A., & Forlizzi, J. (2010). A stage-based model of personal informatics systems. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (pp. 557-566). ACM.	Reading 1; Project Proposal
3	Preparation & Self-Experimentation	-Karkar, R., Schroeder, J., Epstein, D. A., Pina, L. R., Scofield, J., Fogarty, J., ... & Zia, J. (2017, May). Tummytrials: a feasibility study of using self-experimentation to detect individualized food triggers. In Proceedings of the 2017 CHI conference on human factors in computing systems.	Assignment 1 due;
4	Data Collection and Self-Monitoring	- Eun Kyoung Choe, Nicole B. Lee, Bongshin Lee, Wanda Pratt, and Julie A. Kientz. Understanding Quantified-Selfers' Practices in Collecting and Exploring Personal Data. CHI 2014.	Reading 2;
5	Data Integration & Platforms	- Bentley, F., Tollmar, K., Stephenson, P., Levy, L., Jones, B., Robertson, S., & Wilson, J. (2013). Health Mashups: Presenting statistical patterns between wellbeing data and context in natural language to promote behavior change. ACM Transactions on Computer-Human Interaction (TOCHI), 20(5), 30.	Assignment 2 due;
6	Self-Reflection and Data Insights	- Jasmin Niess and Paweł W. Woźniak. Supporting Meaningful Personal Fitness: the Tracker Goal Evolution Model. CHI 2018. - Choe, E.K., Lee, B., Zhu, H., Riche, N.H., & Baur, D. (2017). Understanding Self-Reflection: How People Reflect on Personal Data Through Visual Data Exploration. Proc. EAI International Conference on Pervasive Computing Technologies for Healthcare (PervasiveHealth '17).	Reading 3;
7	Action & Behavior Change	- Consolvo, S., McDonald, D. W., & Landay, J. A. (2009, April). Theory-driven design strategies for technologies that support behavior change in everyday life. In Proceedings of the SIGCHI conference on human factors in computing systems (pp. 405-414).	Milestone 1 due;
8	Design Thinking 1	- Health Design Thinking (pp. 62-23, 72-89) - Design Thinking Process Guide	Reading 4;
9	Design Thinking 2	- The Skeptic's Guide to Low-Fidelity Prototyping - The Messy Art of UX Sketching	
10	Personal Data Visualization & Feedback 1	- Huang, D., Tory, M., Aseniero, B. A., Bartram, L., Bateman, S., Carpendale, S., ... & Woodbury, R. (2015). Personal visualization and personal visual analytics. IEEE Transactions on Visualization and Computer Graphics, 21(3), 420-433 - Shneiderman, B., Plaisant, C., & Hesse, B. W. (2013). Improving healthcare with interactive visualization. Computer,46(5), 58-66.	Reading 5; Milestone 2 due;
11	Personal Data Visualization & Feedback 2	- Choe, E. K., & Lee, B. (2015). Characterizing visualization insights from quantified selfers' personal data presentations. IEEE computer graphics and applications, 35(4), 28- 37. - Data Humanism: The Revolutionary Future of Data Visualization https://www.printmag.com/information- design/data-humanism-future-of-data-visualization/ (Links to an external site.)	

12	Evaluating Health Technologies	- Klasnja, P., Consolvo, S., & Pratt, W. (2011). How to evaluate technologies for health behavior change in HCI research. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (pp. 3063-3072). ACM. - Planning a Usability Test (https://www.usability.gov/how-to- and-tools/methods/planning-usability-testing.html)	Milestone 3 due;
13	Critical Perspectives	- Deborah Lupton. Quantifying the body: monitoring and measuring health in the age of mHealth technologies. Critical Public Health 2013. - Stephen Purpura, Victoria Schwanda, Kaiton Williams, William Stubler, and Phoebe Sengers. Fit4Life: The Design of a Persuasive Technology Promoting Healthy Behavior and Ideal Weight. CHI 2011.	
14	Final Presentation		Final Report due;

In-class time

Class will generally be a mix of reading presentations, discussion, and activities. In-class time aims to be interactive and participatory.

Studio/Section time

Every week, students will spend a lecture in the studio/section with course staff. Staff will recap material covered in lectures, answer questions, lead activities, and provide feedback on assignments/projects.

Weekly Studio Schedule:

1. Introductions
2. Project ideation
3. Design and critique of self-experiments
4. Data collection - introduce various platforms
5. Data integration; Project feedback
6. Data insights; Project feedback
7. Project feedback
8. Storyboarding; Project feedback
9. Low-fidelity UI design; Project feedback
10. Sketch visualization; Project feedback
11. Use tableau for visualization; Project feedback

Assignments

- Assignments x3
- Reading reports x5
- Project milestones x3
- Project final demo + report x1

Group Project

As for your Group project, we will either pair you up with another student or have you find a team member of your choice. For the group project, each team will consist of 3 to 5 members.

Grading Scheme

Component	Weight	Type
Assignments (3)	30%	Individual
Participation (In-class + Online)	10%	Individual
Reading Reflections (5)	10%	Individual
Project Milestones (3 deliverables + reflections)	30%	Group
Final Project (demo + final report)	20%	Group

Grading Scale

The approximate grade thresholds that usually apply in this course are as follows: A (93-100), A- (90-92), B+ (87-89), B (83-86), B- (80-82), C+ (77-79), C (73-76), C- (70-72), D+ (67-69), D (60-66), F (0-59). However, these are subject to change and will be adjusted (in students' favor) based on the class's performance throughout the semester.

Reading Reflection

You will be asked to post a reading reflection based on the assigned reading(s). Each of these reflections will be graded on a simple three-tier scale (full credit/half-credit/no credit). Reading reflections must be turned in the day before the class to receive full credit. If you turn in after the deadline but before class starts, you will receive half credit. Responses turned in after class starts receive a 0. The lowest grade will be dropped, which means that you can just skip one if needed.

Regrades

If you feel that we made a mistake in grading one of your assignments, you may submit it for a regrade if you do so within 5 days of when the assignment was returned to you. Note that a regrade will be a complete regrade and that your grade could go down as a result of the regrade.

Late Assignments

Turning in work late disrupts everyone's lives, including your own. Therefore, all assignments are due at the date and time they are marked as due in the course website. All assignments (except for Reading Reflections) submitted late without prior arrangement will be graded down by 10% per 24-hour period the assignment is late. See the "Reading Reflection" section for how they will be graded. If you need an extension on a particular assignment, please ask your TA or the professor before the assignment is due. Do not wait until the last second. Extensions are not automatically granted: your TA or the professor will make a subjective judgment based on how many previous extensions you have requested, why you are asking for the extension, and how you are doing so far in the course.

If you are physically unable to request an extension before the assignment is due, contact your TA or the professor as soon as you are able to, and explain the situation. For further information regarding religious accommodation and other excused absences, refer to the UMass academic regulations - https://www.umass.edu/registrar/students/policies-and-practices/class-absence-policy.

Required Textbook & Course Materials

- Health Design Thinking: Creating Products and Services for Better Health ISBN-13: 978-0262539135
- We will also use research papers and book chapters from a variety of sources.

Acknowledgements

The design and materials of this course were either inspired by or adapted from a variety of courses

- Eun Kyoung Choe's INST682 - Personal Health Informatics and Visualization at University of Maryland
- Wanda Pratt's INFO 478 – Designing for Personal Health & Wellness
- Jennifer Kim's CS 4803/8803 - Personal Health Informatics at Georgia Tech
- Daniel Epstein's INF 295 - Personal Informatics at UC Irvine
- James Fogarty & Sean Munson's CSE 599/HCDE 548 - Personal Informatics at University of Washington

Communication Policy

We will use Piazza as the primary channel for communication. Feel free to post a note/comment on Piazza with optional anonymity. Note: Posts are anonymous only for your classmates and not the teaching staff. You can also reach out to the instructors privately through Piazza. The other mode of communication is during the teaching staff's office hours. If you need to consult anything with specific teaching staff, you can reach out to them via email.

Accommodation Statement

The University of Massachusetts Amherst is committed to providing an equal educational opportunity for all students. If you have a documented physical, psychological, or learning disability on file with Disability Services (DS), you may be eligible for reasonable academic accommodations to help you succeed in this course. If you have a documented disability that requires accommodation, please notify me within the first two weeks of the semester so we can make appropriate arrangements.

Academic Honesty Statement

Since the integrity of the academic enterprise of any institution of higher education requires honesty in scholarship and research, academic honesty is required of all students at the University of Massachusetts Amherst. Academic dishonesty is prohibited in all programs of the University. Academic dishonesty includes but is not limited to: cheating, fabrication, plagiarism, and facilitating dishonesty. Appropriate sanctions may be imposed on any student who has

committed an act of academic dishonesty. We will take reasonable steps to address academic misconduct. Any person who has reason to believe that a student has committed academic dishonesty should bring such information to the attention of the course instructor as soon as possible. Instances of academic dishonesty not related to a specific course should be brought to the attention of the appropriate Department Head or Chair. Since students are expected to be familiar with this policy and the commonly accepted standards of academic integrity, ignorance of such standards is not normally sufficient evidence of lack of intent (http://www.umass.edu/dean_students/codeofconduct/acadhonesty/).

Inclusivity Statement

In this course, each voice in the classroom has something of value to contribute. Please take care to respect the different opinions, choices, experiences, beliefs, and values expressed by the students, faculty, and staff involved in this course. My colleagues and I support UMass's commitment to diversity, and welcome individuals regardless of age, background, citizenship, disability, sex, education, ethnicity, family status, gender, gender identity, geographical origin, language, military experience, political views, race, religion, sexual orientation, socioeconomic status, and work experience (https://www.cics.umass.edu/diversity).

Copyright Notice

Names & Pronouns

Everyone has the right to be addressed by the name and pronouns that they use for themselves. You can indicate your preferred/chosen first name and pronouns on SPIRE, which appear on class rosters. I am committed to ensuring that I address you with your chosen name and pronouns. Please let me know what name and pronouns I should use for you if they are not on the roster. Please remember: A student's chosen name and pronouns are to be respected at all times in the classroom.

Title IX Statement

UMass is committed to fostering a safe learning environment by responding promptly and effectively to complaints of all kinds of sexual misconduct. If you have been the victim of sexual violence, gender discrimination, or sexual harassment, the university can provide you with a variety of support resources and accommodations. If you experience or witness sexual misconduct and wish to report the incident, please contact the UMass Amherst Equal Opportunity (EO) Office (413-545-3464 | equalopportunity@admin.umass.edu) to request an intake meeting with EO staff. Members of the CICS community can also contact Erika Lynn Dawson Head, director of diversity and inclusive community development (erikahead@cics.umass.edu | 860-770-4770).