COLLEGE OF INFORMATION STUDIES

Designing Patient-Centered Technologies, Spring 2020

INST 408D
Days & Times: Tuesdays 2:00pm-4:45pm
Location: MCB 1207

Instructor: Eun Kyoung Choe (She/Her/Hers)
Office: 2117F
Office Hours: Tuesdays 1:00-2:00pm & By appointment
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Personal website: http://eunkyoungchoe.com/
Course website: https://umd.instructure.com/courses/1278025

TA: Yuhan Luo
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Website: https://www.terpconnect.umd.edu/~yuhanluo

Prerequisites: N/A

Course Communication: Please use ELMS for all course-related communication (e.g., assignment, questions, absences, accommodations). In general, I will strive to respond to your email within 24 hours of when it is received (and by 5pm Monday if it is received on the weekend). I will be most available to answer my emails between Mon-Fri from 8am-5pm and will limitedly answer emails on the weekends.

Course Description:

People increasingly turn to digital health technologies to support in understanding and managing their personal health and wellness. Although companies have responded with a vast array of apps and other technologies, many of them have been created with little understanding of people's needs or potential ethical issues. This situation has resulted in a great need for people who know how to study people's health and wellness needs, what ethical issues are at play, and how to use that knowledge to design improved technologies that meet people's needs and expectations.

This course introduces students to the unique challenges of studying people's health and wellness needs as well as designing and evaluating technologies to meet those needs.

This course is a combination of project-, lecture-, and seminar-based course. Each week, the instructor will provide background knowledge regarding innovative designs and methods for designing patient-centered technologies. As a seminar course, students will read papers, give presentations, and participate in discussions. This course is also a project-based class: Students will have a chance to pitch ideas, recruit team members, and work on an interesting project over the course of 16 weeks. Following the spirit of design thinking, we will spend part of our class time to brainstorm, critique, and share feedback. We will spend the first half of class on lectures & discussion and the other half on projects and design practices.

Student Learning Outcomes:

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

1. Understand the unique challenges of understanding and designing for patient-centered technologies;
2. Understand types of digital health technologies currently available or being researched;
3. Understand key methodological approaches to design patient-centered technologies;
4. Design patient-centered digital health technologies that address people's needs;
5. Evaluate digital health technologies.

Textbook & Course Materials:

- We will also use research papers and book chapters from a variety of sources.

Grading Procedures

Grade is based on the following breakdown:

Component	#of the Assignments	Category Weight
Group Project (G1, G2, G3, G4)	4	40%
Reading Reflection (12)	10 (can drop 2 lowest)	30%
Individual Assignments		20%
In-Class Participation		10%
Total		100%

Final letter grades are assigned based on the percentage of total assessment points earned. To be fair to everyone I have to establish clear standards and apply them consistently, so please understand that being close to a cutoff is not the same this as making the cut (89.99 ≠ 90.00). It would be unethical to make exceptions for some and not others.

Final Grade Cutoffs									
+	97.00%	+	87.00%	+	77.00%	+	67.00%		
A	94.00%	B	84.00%	C	74.00%	D	64.00%	F	<60.0%
-	90.00%	-	80.00%	-	70.00%	-	60.00%		

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. Assignments submitted late without prior arrangement will be graded down by 10% per 24-hour period the assignment is late. If you need an extension on a particular assignment, please ask your TA or the instructor before the assignment is due. Don't wait until the last second. Extensions are not automatically granted: your TA or the instructor 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 (e.g., you're lying unconscious in a hospital after being attacked by a rabid pack of squirrels), contact your TA or the instructor as soon as you are able to, and explain the situation. For further information regarding religious accommodation and other excused absences, refer to the "Student Attendance (Links to an external site.)" section in this university teaching policies & guidelines.

- Reading responses must be turned in before 12pm on the day before the class (a.k.a. Monday) to receive full credit but before class starts to receive half credit. Responses turned in after class starts

receive a 0. The two lowest grades will be dropped, which means that you can just skip two if needed.

- Participation exercises must happen during class. Two classes could be missed and still receive full credit. If students are using their technologies for activities unrelated to class, their participation grade for that class will be 0.

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.

Technology Policy:

Many instructors are banning technologies such as laptops, smart phones, and tablets from use in the classroom because most studies show that students take worse notes, don't pay attention to their instructor or classmates, and learn less when they use those technologies. However, such a policy disadvantages students who would otherwise have difficulty accessing the full content of the class without technology. Also, technologies are a reality in today's world, and everyone needs to learn how to moderate their own use depending on the setting.

In this class, I allow people to use their technologies in class if they are using it for class-related activities (e.g., taking notes). If a student is caught using their technology for something irrelevant to class, then their participation score for that day will be 0. If the class seems overly distracted, I reserve the right to declare a "no tech" time in class.

University Policies and Resources:

Policies relevant to Undergraduate Courses are found here: http://ugst.umd.edu/courserelatedpolicies.html (Links to an external site.). Topics that are addressed in these various policies include academic integrity, student and instructor conduct, accessibility and accommodations, attendance and excused absences, grades and appeals, copyright and intellectual property.

Students with Disabilities:

The University is legally obligated to provide appropriate accommodations for students with disabilities. The campus' Disability Support Services Office (Links to an external site.) (DSS) works with students and faculty to address a variety of issues ranging from test anxiety to physical and psychological disabilities. If a student or instructor believes that the student may have a disability, they should consult with DSS (4-7682, email Dissup@umd.edu). Note that to receive accommodations, students must first have their disabilities documented by DSS. The office then prepares an Accommodation Letter for course instructors regarding needed accommodations. Students are responsible for presenting this letter to their instructors.

Get Some Help!

Taking personal responsibility for your own learning means acknowledging when your performance does not match your goals and doing something about it. I hope you will come talk to me so that I can help you find the right approach to success in this course, and I encourage you to visit tutoring.umd.edu (Links to an external site.) to learn more about the wide range of campus resources available to you. In particular, everyone can use some help sharpen their communication skills (and improving their grade) by visiting ter.ps/writing (Links to an external site.) and schedule an appointment with the campus Writing Center. You should also know there are a wide range of resources to support you with whatever you might need (see go.umd.edu/assistance (Links to an external site.)), and if you just need someone to talk to, visit counseling.umd.edu (Links to an external site.) or one of the many other resources on campus (Links to an external site.).

Most services free because you have already paid for it, and **everyone needs help**… all you have to do is ask for it.

Academic Integrity
See this link for the full information about academic integrity

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 go.umd.edu/basic-needs (Links to an external site.) for information about resources the campus offers you and let me know if I can help in any way.

Names/Pronouns and Self Identifications
The University of Maryland recognizes the importance of a diverse student body, and we are committed to fostering inclusive and equitable classroom environments. I invite you, if you wish, to tell us how you want to be referred to both in terms of your name and your pronouns (he/him, she/her, they/them, etc.). The pronouns someone indicates are not necessarily indicative of their gender identity.
Visit http://trans.umd.edu/ (Links to an external site.) to learn more.

Additionally, how you identify in terms of your gender, race, class, sexuality, religion, and dis/ability, among all aspects of your identity, is your choice whether to disclose (e.g., should it come up in classroom conversation about our experiences and perspectives) and should be self-identified, not presumed or imposed. I will do my best to address and refer to all students accordingly, and I ask you to do the same for all of your fellow Terps.

Syllabus Change Policy:
This syllabus is a guide for the course and is subject to change with advance notice.

Course Design Credit:
Professor Wanda Pratt, University of Washington

Schedule at a glance

Date	Topic
1/28	**Course Overview & Intro to Design Thinking** Required Readings/Videos: • Watch 4-min video summarizing design thinking • Read Design Thinking Process Guide • Read It's Time to Build Health Into the OS: PART 1 (Links to an external site.) Optional Readings: • Part II - Five Ways New Technologies Could Make Our Lives Healthier By Design (Links to an external site.)

	• Part III - How Tech Can Make Everyday Life More Healthy: Some Early Examples (Links to an external site.) In-Class Activities: • Course Expectations & Discussion
2/4	**Understanding People's Needs & Qualitative Data Analysis** Readings: • Braun, V & Clarke, V. (2012). Chap. 4, Thematic Analysis. • Liu, L. S., Huh, J., Neogi, T., Inkpen, K., & Pratt, W. (2013, April). Health vlogger-viewer interaction in chronic illness management. In *Proceedings of the SIGCHI conference on Human factors in computing systems* (pp. 49-58). ACM. In-Class Activities: • Thematic Analysis Exercise
2/11	**Patient-Generated Data 1: Self-Monitoring** Readings: • Choe, E. K., Lee, N. B., Lee, B., Pratt, W., & Kientz, J. A. (2014). Understanding quantified-selfers' practices in collecting and exploring personal data. In Proceedings of the 32nd annual ACM conference on Human factors in computing systems. ACM. • 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. Optional Readings: • EK Choe, S Abdullah, M Rabbi, E Thomaz, DA Epstein, et. al. Semi-automated tracking: A balanced approach for self-monitoring applications. IEEE Pervasive Computing, 2017
2/18	**Patient-Generated Data 2: Sensing Health & Wellness** Readings: • Mohr, Zhang, and Schueller. Personal Sensing: Understanding Mental Health Using Ubiquitous Sensors and Machine Learning. In Annual Review of Clinical Psychology.
2/25	**Visualizing Health Information** Readings: • Eun Kyoung Choe, Bongshin Lee, m.c. schraefel. Characterizing visualization insights from quantified selfers' personal data presentations. IEEE computer graphics and applications. V. 35.4 p. 28-37 Optional Readings: • Eun Kyoung Choe, Bongshin Lee, Sean Munson, Wanda Pratt, Julie A Kientz. Persuasive performance feedback: The effect of framing on self-efficacy. AMIA Annual Symposium Proceedings 2013: 825-835 • http://www.dear-data.com/

3/3	**Communicating about Health** Readings: • Choe, E.K. et al. (2019). Persuasive Data Videos: Investigating Persuasive Self-Tracking Feedback with Augmented Data Videos. AMIA 2019. • LM Vizer, AK Hall. The Patient-Centered Electronic Health Record and Patient Portals. In Consumer Health Informatics, 281-294
3/10	**Health Equity and Digital Health** Readings: • Stowell, E., Lyson, M. C., Saksono, H., Wurth, R. C., Jimison, H., Pavel, M., & Parker, A. G. (2018) Designing and evaluating mHealth interventions for vulnerable populations: A systematic review. In Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems. Paper 15, p. 1–17. Optional Readings: • Siek, K., Veinot, T., & Mynatt, B. (2019). Research Opportunities in Sociotechnical Interventions for Health Disparity Reduction. Computing Community Consortium; 2019 Jun. • Brewer LC, Fortuna KL, Jones C, Walker R, Hayes SN, Patten CA, Cooper LA (2020) Back to the Future: Achieving Health Equity Through Health Informatics and Digital Health. (Links to an external site.) JMIR Mhealth Uhealth 2020;8(1):e14512
3/17	Spring Break
3/24	**Ethical Considerations** Readings: • Chap 10 - Ethics in Biomedical and Health Informatics: Users, Standards, and Outcomes by Kenneth W. Goodman, Reid Cushman, and Randolph A. Miller Optional Readings: • The Washington Post. (2018). "An insurance company wants you to hand over your Fitbit data so it can make more money. Should you?"

3/31	**Supporting Patient-Clinician Communication**
	
	Required Readings:
	• Open Notes Project
	  ○ 1min video & website (Links to an external site.)
	  ○ Impacts of a web-based educational program for veterans who read their mental health notes online (Links to an external site.)
	  Denneson, L., et al., Journal of the American Medical Informatics Association, November 2018, ocy134
	• West P, Giordano R, Van Kleek M, Shadbolt N. (2016). The quantified patient in the doctor's office. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*. New York:ACM, 3066-3078.
	
	Optional Readings:
	• Rupa A Patel, Andrea Hartzler, Wanda Pratt, Anthony Back, Mary Czerwinski, Asta Roseway. Visual feedback on nonverbal communication: a design exploration with

	healthcare professionals. 2013 7th International Conference on Pervasive Computing Technologies for Healthcare and Workshops. p. 105-112
4/7	**Supporting Patient-Patient Communication** Required Readings: • O'Leary, K., Schueller, S. M., Wobbrock, J. O., & Pratt, W. (2018, April). "Suddenly, we got to become therapists for each other": Designing Peer Support Chats for Mental Health. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems* (p. 331). ACM. • Berry, Andrew BL, et al. "How values shape collaboration between patients with multiple chronic conditions and spousal caregivers." Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems. ACM, 2017.
4/14	**Evaluating Health Technologies** Required Readings: • 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.
4/21	**Self-Experimentation** Readings: • 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*(pp. 6850-6863). ACM.
4/28	EK at CHI
5/5	Looking to the future & Course Review
5/12	Final Presentation