USABILITY STUDIES (Section A)
Wednesdays, 6 - 10 pm; Denny 112

INSTRUCTORS

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Acknowledgement for course content: Over the years, this course has been designed by and iterated upon by instructors including Sean Munson, Sarah Coppola, Mark Zachry, Kristin Dew, Daniella Kim, Rebecca Destello, Andy Davidson, Judy Ramey, and many others.

COURSE DESCRIPTION

HCDE 517 will introduce you to usability testing and the role of usability research in the user-centered design process. During the course, you will learn how to identify usability concerns for specific products and users, design and implement a usability study, create data collection instruments, analyze results, and effectively report and communicate your findings.

The methods, strategies, and approaches you learn in this course will apply to computational products (software), physical products (hardware), and services. As such, we encourage you to bring up and discuss a variety of examples in the class. A large part of the learning experience in this course is through your peers and group projects - so please seek help if you encounter challenges and openly discuss different approaches to addressing issues!

LEARNING OBJECTIVES

By the end of this course, you should be able to:

- Explain what usability testing/research is and its relation to the user-centered design process
- Identify critical usability issues of a product/service and design appropriate usability study
- Administer a usability study, analyze results, and communicate findings effectively
- Explain how usability analysis might inform the design of new products or services

KEY COURSE LINKS

- Canvas Site - to access lecture slides, assignment rubrics/descriptions, etc.
- Slack Workspace - main form of communication
- Student Intro Slides
- Reading Presentation Sign Up Sheet
- Sponsored Client Projects
- Optional Readings

COMMUNICATION

Email: Put [HCDE517] in the subject; include **both** Dr. Cherukumilli (katyach@uw.edu) and Laura Swartley (swartl@uw.edu) so we can respond within 1-2 days.

Slack Workspace- Your peers likely have similar questions regarding projects and readings – so please post them in a channel where others can contribute to the discussion as well

GRADING

Assignment Category	Grade Percentage	Due Date
Reading Presentation & Discussion	10%	Sign Up Here!
P1. Preliminary proposal & team contract	Credit / No Credit	Jan 19
P2. Interaction map	10%	Jan 28
P3. Usability study plan	15%	Feb 4
P4. Usability study kit	15%	Feb 11
P5. a) Project presentation b) Project report	35%	a) March 6 b) March 11
Self Reflection & Team Evaluation	10%	March 11
Class Participation	5%	All quarter :)
Total Grade	**100%**	

Notes: i) Project Assignments (P1-P5) make up 75% of your grade!
        ii) HCDE grading policy: https://www.hcde.washington.edu/myhcde/teaching/grading

COURSE TEXTS

Course texts are available for free online with UW netID through EBook Central, O'Reilly Academic, or UW Libraries. In the achedule below, all textbook chapters are individually linked to the O'Reilly chapters, for your convenience.

(1) Tullis, T., & Albert, Bill. (2013). Measuring the user experience : Collecting, analyzing, and presenting usability metrics (2nd ed.). Waltham, MA: Morgan Kauffmann/Elsevier. *(You can access physical text at Elsevier or Amazon)*
(2) Rubin, J., & Chisnell, Dana. (2008). Handbook of usability testing : How to plan, design, and conduct effective tests (2nd ed.). Indianapolis, IN: Wiley Pub. *(You can access physical text at Wiley or Amazon)*

SCHEDULE

Date & Slides	Discussion Topics & Assignments	Readings *optional additional readings found here
Week 1 **JAN 3**	**Course Overview** ● Student Introductions ● What is Usability? ● History of Usability Edit intro slide during break time	**Core Readings - Required** 1. W Craig Tomlin. "UX Killed Usability." 2. Goldberg. "Design Flaws In Electronic Health Records Can Harm Patients, Study Finds," WBUR.
Week 2 **JAN 10**	**Usability Testing Considerations** ● Why do we need usability testing? ● Usability testing within user-centered design process ● Identifying usability concerns ● Usability inspection methods (heuristic evaluations, cognitive walkthroughs) *Choose teams and projects* *Workshop: Identifying & developing usability concerns and questions* Sign up for reading presentation Review sponsored projects Complete team formation survey	**Core Readings - Required** **Textbooks - Overview** 1. Tullis & Albert, "Introduction" 2. Rubin & Chisnell, Chapters 1 -3 **Usability evaluations** 3. Jeff Sauro, "What's the Difference between A Heuristic Evaluation and a Cognitive Walkthrough?" 4. Jakob Nielsen, "Usability Heuristics" (ch 5)". Usability Engineering 5. Stephanie Rosenbaum, "Usability Evaluations Versus Usability Testing: When and Why?" **Student Presentation Readings** **Guidelines for usability** ● Gould & Lewis, "Designing for Usability: Key Principles and What Designers Think." ● Research-Based Web Design & Usability Guidelines **Student Presentation Readings** **Heuristic evaluations for specific settings** ● Mankoff et. al. 2003. Heuristic evaluation of ambient displays. CHI 2003. ● Bertini et. al. Appropriating and assessing heuristics for mobile computing. AVI 2006. ● Menno de Jong & Thea van der Geest, "Characterizing Web Heuristics" ● Langevin et. al.. Heuristic Evaluation of Conversational Agents. CHI 2021. **Cognitive walkthroughs in other settings**

		● Lyon et. al. The Cognitive Walkthrough for Implementation Strategies (CWIS): a pragmatic method for assessing implementation strategy usability. Implementation Science Communications 2 (2021).
Week 3 **JAN 17**	**Planning for Usability Study** ● Planning a study given constraints ● Role of interviews and focus groups ● Selecting representative users ● Ethics ● Accessibility Due Friday, Jan 19 P1. Preliminary proposal & team contract	**Core Readings - Required** **Textbooks - Planning for usability testing** 1. Rubin & Chisnell, Ch 5-7: "Develop the Test Plan", "Set Up a Testing Environment", "Find and Select Participants" 2. Tullis & Albert, Ch 2 - "Background" **Ethics** 3. Code of Conduct of the User Experience Professionals Association (2013) **Number of participants** 4. Required: Martin Schmettow. Sample size in usability studies. Communications of the ACM. (2012). **Student Presentation Readings** **Ethics** ● Code of Conduct of the User Experience Professionals Association (2013) ● Ethics of UX Research. (2014). ● Ethics of Studying Digital Contexts. (2020). **Accessibility** ● What are the differences between universal design, accessibility, and inclusive design? SayYeah. ● Web Accessibility in Mind ● Petrie & Bevan. "The evaluation of accessibility, usability, and user experience" in The Universal Access Handbook. ● Reframing Accessibility for the Web ● Introduction to Web Accessibility ● Microsoft. Surface Adaptive Kit ● Design for Autism
Week 4 **JAN 24**	**Forming an Initial Test Plan** ● What are the responsibilities of a tester? ● What are general	**Core Readings - Required** **Textbooks - usability test plans & roles** 1. Tullis & Albert, Ch 3 - "Planning a Usability Study"

considerations to drive a test plan?
- What is essential and what is optional when preparing a meaningful study?
- How many methods should you use? What are alternative methods?

P2. Interaction map
- Draft: in class
- Final: Sun 1/28

2. Rubin & Chisnell, Ch 4 - "Skills for Test Moderators"

Alternate Methods & Comparing Methods
3. Medlock MC, Wixon D, McGee M, & Welsh D. "The Rapid Iterative Test and Evaluation Method (RITE): Better Products in Less Time"
4. Walji et al. "Are Three Methods Better Than One? A Comparative Assessment of Usability Evaluation Methods in an EHR?", IJMI 2014.

Student Presentation Readings
Usability and automation
- 99% Invisible: Children of the Magenta (Automation Paradox, pt. 1)
- 99% Invisible: Johnnycab (Automation Paradox, pt. 2)
- The Deadly Price of the Automaton Paradox

Usability, children, and aging
- "Usability Testing with Kids and Teens"
- RL Franz, C Munteanu, BB Neves, R Baecker. Time to Retire Old Methodologies? Reflecting on Conducting Usability Evaluations with Older Adults. MobileHCI '15.
- J Nielsen. Seniors As Web Users.

| Week 5 JAN 31 | **Designing a Study**
- What test materials do we need for a usability study?
- What will be measured?
- How do we create successful data collection instruments?

Workshop: Study Plans

P3. Usability study plan
- Draft: in class
- Final: Sun 2/4 | **Core Readings - Required**
Preparing Test Materials
1. Rubin & Chisnell, Ch 8 - "Prepare Test Materials"

Metrics and Measures
2. Tullis & Albert, "Performance Metrics" (ch 4), "Issues-based Metrics" (ch 5), "Self-reported Metrics" (ch 6), "Behavioral and Physiological Metrics" (ch 7)
3. Joe Dumas, "Usability Testing Methods: Subjective Measures," in The Human-Computer Interaction Handbook: Fundamentals, Evolving Technologies, and Emerging Apps., 3rd ed.
4. Jeff Sauro & Joe Dumas. "Comparison of Three One-Question, Post-Task Usability Questionnaires," CHI 2009.

Student Presentation Readings
Remote Testing & data collection
- MS Andreasen, HV Nielsen, SO Schroder, J |

Stage. 2007. "What happened to remote usability testing?: an empirical study of three methods." CHI 2007.
- Björn Völkers. A beginner's guide to remote usability testing
- Remote Moderated Usability Testing. Nielsen Norman Group.
- Moderated and Unmoderated Think Aloud Comparison. (2015)

Studies in difficult contexts
- Uber's usability work with drivers.

User burden scale
- Hyewon Suh, Nina Shahriaree, Eric B. Hekler, Julie A. Kientz. "Developing and Validating the User Burden Scale: A Tool for Assessing User Burden in Computing Systems" CHI 2016.

Controversial design patterns- Hamburger Icon
- Who Designed the Hamburger Icon (Gizmodo)
- UX Planet. Guide to Hamburger Icon & its Alternatives
- Hamburger menu UX: Too ubiquitous to fail?
- The Hamburger is Bad for You - MOR10
- Why and How to Avoid Hamburger Menus - Luis Abreu - Product Design
- Basement Menus and Breaking the "Rules" of App Design

Week 6 **FEB 7**	**Conducting a Study** ● What is "thinking aloud"? ● What is key to successful facilitation? ● How do we collect data from a usability study? *Workshop: Study Kit* P4. Usability Study Kit ● Draft: in class ● Final: Sun 2/11	**Core Readings - Required** **Conducting Test Sessions** 1. Rubin & Chisnell, Ch 9 - "Conduct the Test Sessions" 2. Michael Hawley. "User Interview Techniques, Guidelines for Obtaining Better Results," User Experience 8(3). 3. Michael Margolis. "How to hack your body language for better interviews," Design Staff. **Think Aloud Testing** 4. Judy Ramey. "Methods for successful "Thinking Out Loud" procedures." **Student Presentation Readings** **Blank Page Technique and Paper Prototyping** ● Still & Morris. (2010). "The Blank-Page

Technique: Reinvigorating Paper Prototyping in Usability Testing," IEEE Transactions on Professional Communication 53(2).
- Paper Prototyping is a Waste of Time
- The Magic of Paper Prototyping

Deception in UI/UX
- Press me! The buttons that lie to you BBC Future
- Adar & Teevan. Benevolent Deception in Human Computer Interaction. (2013).

Invisible OSs, Recognition, and Recall
- R Budiu. Memory Recognition and Recall in User Interfaces Nielsen Norman Group.
- J Pavlus. "No UI" Design's Next Move: Fake UI. FastCompany
- Why Zen Mode Isn't the Answer to Everything (Nielsen Norman Group).
- The Best Interface is no Interface.
- No to NoUI. ElasticSpace.

Week 7

FEB 14

Data Analysis and Reporting
- Validity & Reliability

Prof. Daniela Rosner comes to class

Core Readings - Required
Data Analysis
1. Rubin & Chisnell, Ch 11 - "Analyze Data and Observations"
2. Tullis & Albert, Ch 8 - "Combined and Comparative Metrics"
3. Chauncey Wilson. "Analyzing and Reporting Usability Data," STC Usability SIG Newsletter.
4. Michael Hughes. "Rigor in Usability Testing," Technical Communication, Fourth Quarter (1999): 488-94.

Student Presentation Readings
Voice User Interfaces and Usability
- Getting Started with the Guide | Alexa Design Guide
- Voice Interaction UX: Brave New World...Same Old Story. Nielsen Norman Group.
- Emotion and Voice User Interfaces: UX Matters
- Is Voice UI the future of user experience design? UX Magazine

Large Quantitative Datasets
- Walter C. Mankowski, Peter Bogunovich, Ali Shokoufandeh, & Dario D. Salvucci. "Finding Canonical Behaviors in User Protocols," CHI

		2009. ● A Refresher on A/B Testing ● Mary C. Burton, Joseph B. Walther. The Value of Web Log Data in Use-Based Design and Testing. Journal of Computer Mediated Communication 2006.
Week 8 **FEB 21**	**Communicating Your Findings** ● Discuss details for the final assignments ● How can data and findings be meaningfully shaped for stakeholders? ● Reporting and communicating results **Usability experiences in sociotechnical systems (tentative)** ● What is usable in social / collaborative settings? ● Can things be "too" usable? (& other dilemmas)	**Core Readings - Required** **Reporting Results** 1. Rubin & Chisnell, Ch 12 - "Report Findings and Recommendations" 2. Amy Schade. 2013. "Making Usability Findings Actionable: 5 Tips for Writing Better Reports." 3. Dave Yeats & Locke Carter. "The Role of the Highlights Video in Usability Testing: Rhetorical and Generic Expectations," Technical Communication, May 2005: pp. 156-162(7). 4. Jakob Nielsen. 2005. "Formal Usability Reports vs. Quick Findings." 5. Chauncy E. Wilson & Kara P. Coyne. 2001. Tracking Usability Issues: To Bug or Not to Bug?, ACM interactions. **Student Presentation Readings** **Alternative Methods** ● Kerry Rodden, Hilary Hutchinson, & Xin Fu. "Measuring the User Experience on a Large Scale", CHI 2010. ● Sheryl Ehrlich, Karen Cross, Wilson Chan, Darcey Imm. "More for Less: A Novel Hybrid Method to Maximize the Impact of Research," Ext. Abstracts CHI 2003. **Technical choices that affect usability** ● Toby Biddle. Site Speed and Usability

Week 9 FEB 28	**Usability in the Field & Moving Forward** ● What are the benefits & challenges of conducting usability activities in the field? ● What are other tools and approaches? **Industry experts panel!!**	**Core Readings - Required** **Critiques** 1. Erin Friess, 2010. "The Sword of Data: Does Human-Centered Design Fulfill its Rhetorical Responsibility?" Design Issues 26(3). 2. Greenberg & Buxton, "Usability Evaluation Considered Harmful (Some of the Time)," CHI 2008. **Student Presentation Readings** **Biometrics** ● Jeremy Kahn. "Expedia Reads Your Mind (and Face) to Beat Rivals." ● The Generation Gap of Snapchat: UX for Different Age Groups | Usertesting.com ● Why Snapchat's Design is Deliberately Confusing | by Benjamin Brandall | Prototypr **Various takes on the state of usability over time** ● Janice Redish. 1995. "Are we really entering a post-usability era?" SIGDOC Asterisk J. Comput. Doc. 19(1): 18-24. ● James Kelway. "Usability is dead." ● N Tractinsky, AS Katz, D Ikar. 2000. "What is beautiful is usable," Interacting with Computers 13(2): 127-145.
Week 10 MAR 6	**Final Lecture - Wrap Up** P5a. Presentation	:)
Week 11 MAR 11	**NO CLASS** P5b. Report P6. Self reflection & team evaluations	:)

ADDITIONAL RESOURCES

General Policies
Read through the HCDE Student Rights Policies, the UW Student Code of Conduct, UW College of Engineering Academic Misconduct Policy, and the HCDE Plagiarism Policy. Collaboration in this course is encouraged, but please cite and properly attribute others' ideas. Constructive feedback is welcome, and we encourage everyone to actively participate in discussions, stay engaged in course material, and learn from one another!

Student Mental Health and Safety
Being a student can be a stressful experience. If you need support or are feeling overly stressed, you are welcome to reach out to the instructional team at any time. We will do our best to listen and support you, but you should also realize that we are not trained professionals in counseling. The UW Counseling Center provides a number of options for receiving support, including self-help, workshops, and short-term and long-term counseling. If you are experiencing a crisis situation after hours and cannot wait until the UW Counseling Center is open, please call 206-616-7777 or use the online chat with the HuskyHelpline. If you are experiencing a life-threatening emergency, dial 911. If you feel unsafe, please contact UW Safe Campus at (206) 523-7233 (SAFE).

Access & Accommodations
Your experience in this class is important to us. If you have already established accommodations with Disability Resources for Students (DRS), please communicate your approved accommodations to us at your earliest convenience so we can discuss your needs in this course.

If you have not yet established services through DRS, but have a temporary health condition or permanent disability that requires accommodations (conditions include but not limited to; mental health, attention-related, learning, vision, hearing, physical or health impacts), please contact DRS at 206.543.8924, uwdrs@uw.edu, or disability.uw.edu. DRS offers resources and coordinates reasonable accommodations for students with disabilities and/or temporary health conditions.

Reasonable accommodations are established through an interactive process between you, your instructor(s), and DRS. It is the policy and practice of the University of Washington to create inclusive and accessible learning environments consistent with federal and state law.

Religious Accommodations
Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities.

The UW's policy, including more information about how to request an accommodation, is available. Accommodations must be requested within the first two weeks of this course using the request form.

Student Conduct
The University of Washington Student Conduct Code (WAC 478-121) defines prohibited academic and behavioral conduct and describes how the University holds students accountable as they pursue

their academic goals. Allegations of misconduct by students may be referred to the appropriate campus office for investigation and resolution.

Harassment will not be tolerated, and consequences will include immediate removal from the Slack workspace and other course tools. I also emphasize the importance of respecting your classmates' (and teaching team's) boundaries around how and when they wish to be contacted.

Title IX

UW, through numerous policies, prohibits sex- and gender-based violence and harassment, and we expect students, faculty, and staff to act professionally and respectfully in all work, learning, and research environments. For support, resources, and reporting options related to sex- and gender-based violence or harassment, visit UW Title IX's webpage, specifically the Know Your Rights & Resources guide.

I am not an official required to report under UW's Title IX plan. This means I am not legally required to report misconduct or crime; if you share a problem with me, I will work with you to determine next steps and connect you (or the person who experienced the conduct) with resources and individuals who can best provide support and options. You can also access those resources directly:

- Confidential: Confidential advocates will not share information with others unless given express permission by the person who has experienced the harm or when required by law.
- Private and/or anonymous: SafeCampus provides consultation and support and can connect you with additional resources if you want them. You can contact SafeCampus anonymously or share limited information when you call.

Please note that some senior leaders and other specified employees have been identified as "Officials Required to Report." If an Official Required to Report learns of possible sex- or gender-based violence or harassment, they are required to call SafeCampus and report all the details they have in order to ensure that the person who experienced harm is offered support and reporting options.