Human-Computer Interaction Design Methods
INST 632

Hornbake 0123
Thursdays 5:30 – 8:15PM

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Course Webpage: ELMS - https://myelms.umd.edu/courses/1010253

Required Textbooks: There are no required textbooks to be purchased. We will be reading a series of research articles and web articles for this course.

Required Technology: While no technology is officially required, you will be asked to use the following technologies, online communities, and websites throughout the course:

- Twitter (if you are opposed to creating an account on Twitter, you can bring your tweets printed out to class)
- Canvas (we will be exploring the usability and providing feedback for the Canvas system that UMD is migrating to in the spring)
- Others: There may be other social media and sharing sites we use depending on our needs (e.g., Google drive) and creativity!

Prerequisites: N/A

Method for communication with students outside the classroom:
Email, Twitter (hashtag TBA), Course ELMS site

Course Description

This course covers methods of user-centered design, including understanding user needs, ideation, contextual design, participatory design, iterative prototyping, and visual design. Readings will include journal and conference papers, book chapters, government documents, commercial websites, and more. All students will be expected to engage in class discussions and complete small group in-class exercises, short assignments, a poster presentation, and final group project presentation/prototype.

Course Goals

- To gain an understanding of the main methods of design for HCI
- To learn to critique existing technologies for redesign
- To learn to execute an HCI design project from ideation to formative testing
- To gain experience in presenting HCI design results in oral and written forms

Assignments and Grading

General

All assignments must be submitted to on the wiki on the Assignment Turn In Page. You can submit assignments directly on the wiki (i.e., by entering text into the wiki) or by uploading documents to the wiki. Assignments must be turned in by 2pm on the day they are due. Late assignments will be deducted 5 points after 2pm, and an additional 10 points each day they are late (up to 5 days).

Grading

Assignment Category	%
Class Participation	15%
Short Assignments	15%
Project Part 1	20%
Project Part 2	20%
Project Part 3	20%
Project Reflections	10%

Class Participation

Each class is critical to your learning experience. Your energy in contributing to class discussions, small-group exercises, and on-going research will be important. Therefore, coming to class prepared (e.g., reading all course readings, working on project research, etc.) will be necessary to receiving full credit for class participation. Included in this grade will be any reading materials or contributions you are asked to make in preparation for the discussion of the readings (e.g., tweets, bringing in example web page designs, etc.).

For most class discussion days where readings will be discussed, you will be asked to post a tweet about each of the readings we discuss. Your tweets should include an insight or main point from the article or a question you had about the article. Be sure to tag each tweet with the last name of the first author. For example, an article by me would be tagged #clegg. If you prefer not to post tweets publicly, you can print them out and hand them in to me before the start of class. Your class participation grade will include the amount and quality of your tweets.

Class Project

This course consists of an overall project that spans throughout the course. There will be four project deliverables, due throughout the semester. For projects, you will work in teams of 2-3 people. Project deliverables must, like all assignments, be submitted on the wiki.

Assignments

Short Assignments

Note: There may be some short assignments added to the list throughout the semester. These will be announced in class and/or via email so that everyone is aware of them. You will typically have one week to complete them.

Short Assignment: CITI Training
Due September 19, 2013

The University of Maryland's Institutional Review Board (IRB) requires that all researchers on campus who work with human subjects complete an ethics training course prior to their work with human subjects. All published research projects must be IRB approved and members of the research team must have IRB certification. Although you will not be required to publish the results of our work from this class, you will be working with human subjects for your project and assignments in this course. You will therefore need to complete this training.

For this assignment, you will need to complete the University of Maryland's required CITI training. You can find the link and instructions here: http://www.umresearch.umd.edu/IRB/citi.html. Specifically, you only need to complete the Social and Behavioral Research - Basic/Refresher course. To turn in this assignment, attach the pdf of your completion report to your submission on Canvas. Make sure that you keep this file for your own records so that you will have this if and when you begin working on research projects. If you have completed the course previously, you may submit your completion report from your previous completion for this assignment.

Short Assignment: Project Part 0 - Topic Definition
Due September 20, 2013

Part 0 involves forming your team and picking your project topic. As stated previously, aim to assemble a group of people with different skills. We will use our class wiki to keep everyone aware of the different project groups. We have started a "project group" page where each group will list group name, group member names, and a brief description of what the group will be working on. For Part 0, you are to **create a paragraph on the project wiki** page on ELMS that contains **your team name, group members, and topic**.

Short Assignment: Food and Nutrition Interview
Due September 26, 2013

Based on your narrowed topic with respect to technology for food and nutrition, develop an interview guide for a 20-30 minute interview. Conduct two 20-30 minute interviews (with individuals or families) about their food and nutrition practices. You can conduct

these interviews within your newly formed project groups. Your group should submit for the assignment:

- Your interview guide
- Your notes from the interview (e.g., what participants said that stood out to you)
- Reflections about interview guide and the process of conducting interviews more generally
    - What worked well?
    - What would you do differently?

Short Assignment: Re-design [College Department Name] Website
Due October 24, 2013

The Department of [College Department Name] in the College of [College Name] is in the process of re-vamping their website. They have conducted studies with individual faculty and with the IT services department within the college. The major concerns include ease of navigation, inaccurate or incomplete content (including misspellings) and weak aesthetic appeal. They are concerned that the divisional design of the website may reflect the department's organization but it does not provide a logical structure for prospective students, current students, or organizations wishing to find out what [the department's] students and faculty do.

For this assignment, you should use an approach we have discussed in class (e.g., interviews, observations, participatory design, contextual inquiry) to design an initial prototype for [the department's] home page. You should submit a digital or paper-based design that shows what the website will look like. Additionally, you should submit a written description of how the website itself will be designed to:

- Provide a logical structure for prospective students, current students, or organizations
- Promote logical and fluid navigation throughout the system of pages
- Promote a more pleasing aesthetic appeal

Short Assignment: Revision of Initial [College Department's] Website Design
Due **Friday** November 14, 2013

Taking into consideration the papers you read about visual design, our in class discussion on the topic, and additional insights you have had since you submitted your re-design of the department's website, revise the website you previously designed. You should submit for this assignment, a digital prototype of the web site as well as a written description of the design and discussion of:

- The visual design principles that informed your revision
- How the revisions will better enable the website to accomplish it's goals. You should include a discussion of how the revisions will provide a better structure for stakeholders (e.g., students, organizations, prospective students, faculty), promote better navigation, and/or promote a more pleasing aesthetic appeal.

Course Project
This term you will undertake a group project to accomplish the following goals:

- Evaluate a computing-related task or problem (see problem context)
- Develop interface design alternatives for the task or problem
- Develop a prototype of your design
- Conduct initial evaluations of your design

This project should provide you with hands-on experience with the tasks that interface designers face every day. Each project group will be graded as a team, i.e., each group member will receive the same grade. Lack of participation by any individual may precipitate a grade reduction for that individual. Within the team, you must negotiate how much and what each person will contribute. Think carefully about your team members: Where do people live and what hours do they work? Where will you meet? We will have several class periods throughout the semester dedicated to working in your groups on your projects, where I will be able to walk around and answer questions and give feedback. I strongly encourage you to form a heterogeneous group composed of individuals possessing varying skills.

For each part of the project, each group must submit a report. All submissions are to be made via the assignment turn in space on ELMS for that project part. As with any written report, in addition to grading the document based on content, I will also be grading based on degree of professional preparation, expressiveness, grammatical soundness, and the ease with which it can be viewed and understood. A good design effort can easily be hampered by a poor communication of what was done. Make sure that you produce a report that is illustrative of your efforts and process.

Context

For this project, your client will be the Nutrition Services Department of the University Health Center, here at the University of Maryland (http://www.health.umd.edu/nutritionservices). The mission of the University Health Center Nutrition Service Department is to "equip and support members of the campus community with the knowledge and skills needed to make healthy nutrition choices." As a part of this mission, you will be working in small groups (of about 3 students) on a course project to design new technology for facilitating, enabling, and/or promoting healthy eating for university students and families.

You will therefore embark on a three-part project. First, your assignment (Project Part 0) will be to narrow down a particular issue or topic with respect to nutrition and healthy eating that you would like to address. Next, (for Project Part 1) you will use methods we discuss in class to understand the needs of users within the context of your topic. You will then (in Project Part 2) design frames for three alternative prototypes of technologies to address the user needs you identified previously. Finally, (for Project Part 3), you will further develop the design of one prototype and gather initial evaluation feedback on your technology design.

Project Part 1
Due October 10, 2013

The key goal of this first substantive part of the project is to deeply understand the **problem space** that you are addressing, its set of pertinent users, and the issues and constraints that are involved in the problem. If the task is accomplished through an existing system or interface, you should perform an interpretive evaluation of that system or interface to help you learn more about it. The most important goal of Part 1 is to identify important characteristics of the problem that will influence your subsequent design. A major mistake that students make on Part 1 is to suggest potential solutions without first identifying the problem and its characteristics. You'll have plenty of time for designs of possible solutions in Part 2. For now, suppress the urge to problem-solve and concentrate your efforts fully on developing an in-depth understanding of the problem at hand.
In class we will discuss observation and interviewing techniques for acquiring this kind of information. Your report and deliverable for this part should deeply examine the problem of study. In general you should be attempting to answer these questions:

- Who are the potential users?
- Who are the potential stakeholders?
- What tasks do they seek to perform?
- What functionality should any system provide to these users?
- What constraints will be placed on your eventual design?
- What criteria should be used to judge if your design is a success or not?

I recommend the following structure for your report. Remember to state how you collected your data and justify the methods that you used. If you selected one method over other possible methods, include a brief statement of why you chose not to use those other methods. Because of the nature of your project, technology may not be currently used to address the problem or issue you are investigating. In such cases, be sure to describe the ways the current issue or problems are being addressed.

[5 pts] An overview of the problem or opportunity and a statement of why an interface or system is necessary or advantageous to solve it.

[10 pts] Discuss the methods you used for collecting data about your users. Specifically state what data you collected (e.g., interviews, observations, participant observation, etc.). Discuss the details of your data collection (e.g., number of participants, length of time you did observations, etc.). Also discuss your justification for your methods (e.g., why you chose one technique over another, how you decided upon procedural details of your data collection).

- [15 pts] A description of the important characteristics of **the users** of the system.
- [30 pts] A task analysis consisting of the following items.

    - [10] A description of the important characteristics of **the tasks** performed by users.
    - [10] A description of important characteristics of the task environment.
    - [10] A simple structured task analysis of the problem (as discussed in our readings on task analyses).
- [10 pts] An analysis of the existing system, automated or manual, including its strong points and deficiencies.
- [10 pts] A description of the larger *social and technical system* in which your design will intersect.
- [5 pts] An initial list of criteria that should be used in the eventual evaluation of your design.
- [5 pts] A discussion of the implications of what you learned above. Go beyond the usability criteria in this section.
- [10 pts] Presentation of your findings to cross-class group.

The last item in the list above is critical. Don't only describe the target users, tasks, environment, etc. You must also tell us how these attributes should or will influence your eventual designs. Are there any implications to be made from the user profiles and other data you learned? I will be very careful to look for this information in your report.

Project Part 1 Reflection (Individual Assignment)
Write a reflection (one page or less) about what you learned from working on this part of the project. Specifically state what went well, what went wrong, and what you learned from the process of working on this project. Also discuss what you would do differently if you were to do this part again. Note that this is the individual portion of what you are to turn in for the project.

Project Part 2
Due November 7, 2013

The key goal of Part 2 of the project is to use the knowledge gained in Part 1, as well as that from class, to **develop multiple design alternatives** for your problem. This is the stage of "informed brainstorming." These alternatives should explore the **design space** of the problem.

In this part of the project you will develop mock-ups, storyboards, and sketches of your interface designs. That is, you should provide pencil-and-paper or electronic images of the interface at various stages. You do not need to build a working prototype. In fact, I recommend that you do not try to develop full prototypes in this part so that you can focus your time and effort on a broad exploration of the many design possibilities that exist for your problem or task.

Although I am not looking for a full-scale prototype, your design sketches should be sufficiently detailed for a potential user to provide useful feedback about the design. Along with your design mock-ups, you should provide a brief narrative walk-through of how the proposed system will work. Perhaps most importantly, you should also include your justifications for why design decisions were made, and what you consider to be the relative strengths and weaknesses of your different designs.

The design process you follow here is important. You should arrive at your different designs through direct collaboration and group brainstorming. **Do not** split up, have everyone create one design, and present each person's design as a possible alternative. Good, creative design processes do not work in this fashion. Your results should come from something more like a brainstorming session with all team members present. You should seek to create some fundamentally different design ideas, i.e., concepts all over the potential design space for the problem you have chosen. The key is to push the boundaries of the space of design possibilities.

Your project report should include all the explanatory material mentioned above as well as all the design sketches, drafts, storyboards, etc., that you generated. Make sure that your report adequately reflects the design process that your group undertook. The key in this part of the project is to develop **several different** design ideas, not just a set of minute variations on some basic design. At a minimum, you must submit three different designs. It cannot be stressed enough that I seek significantly different design ideas; quality is more important than quantity. In particular, I would much rather see three very different designs described in great detail than five or six rather similar designs described in shallow detail.

Use the following structure for your report.

- [1 pt] Project Description: Write an updated **one paragraph** description of your project. Simply re-introduce the general area of application, intended tasks it will support and the intended user population.
- [4 pts] Requirements Summary: Briefly state key requirements from your system. Again, the goal here is to re-introduce the requirements developed in Part 1, though it is OK if you introduce new or altered requirements here. Do not exceed one page in this summary.
- [10 pts] Design Methodology: discuss your methods for designing your prototypes. Talk about how you incorporated methods or techniques we discussed in class (e.g., participatory design, action research, contextual inquiry) in your design process.
- [10 pts] Design Space: Describe the design space of the potential interfaces for your system. In particular, answer the following questions (you may use each of these questions as section sub-headings if you wish, but that is not required).
    - What requirements may be difficult to realize?
    - What are some tradeoffs that you should or did explore?
    - Which tasks will be easiest to support? Which are hardest?

- [15 pts] Design Summary: Briefly describe the design alternatives that you considered exploring, including alternatives that you did not ultimately pursue. Do not cover **every** idea that you discarded, but rather group them and discuss as a whole. Make sure to justify your choices (Why did you not pursue certain avenues? Why did you decide to pursue the designs that you actually produced?). Justifications need not be lengthy; a few sentences for each should suffice.
- [60 pts] The designs: Present each design that you created. Remember that you should present at least three designs. Cover each design in its own section by presenting the following information.
    - [10%] A brief overview of the design.
    - [35%] Illustrations of the design (sketches, storyboards, etc.)
    - [20%] At least one scenario written from a user's perspective.
    - [35%] An assessment of this design (advantages, disadvantages, and the degree to which your requirements can be met by the design). Include feedback from potential users in the assessment. Make sure to express how you gathered this feedback.
- [5 pts] Requirements changes: You more than likely modified, added to, or removed elements of your requirements and usability criteria as a result of conducting the design process. Discuss these in this section... what were they and how did they arise?

In addition to producing the report, you will also have to create a **poster** that illustrates the problem and users that you are addressing, the requirements that you have developed, and the multiple design alternatives that you have developed. We will use one class day as a poster session near the end of this part. Everyone will then circulate and interact with the designers as well as other invited students and faculty. The idea here is that each group can use this opportunity to get feedback about their design ideas as they narrow their design space and head into Part 3 of the project.

Project Part 2 Reflection (Individual Assignment)
Write a reflection (one page or less) about what you learned from working on this part of the project. Specifically state what went well, what went wrong, and what you learned from the process of working on this project. Also discuss what you would do differently if you were to do this part again. Note that this is the individual portion of what you are to turn in for the project.

Project Part 3
Due December 12, 2013

In Part 3 of the project, your group will implement a detailed prototype (i.e., paper, mid-tech, or interactive) of your interface. You can use any prototyping tools that you would like to assist this process (such as VB, Hypercard, Director, PowerPoint, web pages, clay, paper, plastic, etc.). We will discuss in class the different forms that this can take. Note that you should feel free to "mix and match" aspects of the different designs from Part 2 into the Part 3 prototype.

You must provide a set of initial usability specifications for your system and a plan for an evaluation of it. To develop usability specifications, consider the objectives of your design. For example, if you are working on a calendar manager, you might specify time limits in which you expect a user to be able to schedule or modify an appointment, or a maximum number of errors that you expect to occur. Basically, you should list a set of criteria by which your interface can be evaluated.

Your report write-up for this part should include a description of your system prototype. You can include screen shots or photographs to help explain it and text to describe how a user would interact with it. Discuss the implementation challenges you faced. Were there aspects that you wanted to build but could not? In addition to the prototype description, it is key to include a justification of why you built your prototype. What's special about this particular design with respect your problem? You are encouraged to include feedback from users and from the poster session in your justification.

You should also include an initial evaluation plan for the system. You should use some of the data gathering techniques we discussed in class (e.g., interviews, observations of participants with your prototypes), other relevant data gathering techniques we did not discuss (e.g., surveys, heuristic evaluations), and/or other design techniques for getting feedback from users (e.g., participatory design). You should show (with screenshots and descriptions) at least one iteration on your design based on this initial feedback. This does not have to be a huge change, it could be as small as one feature of your system, based on what your participants said was most important. You should also tell us about what you might do in future iterations of the design based on this feedback. Finally, you should also include reflections on your initial evaluation data gathering techniques and what you might do differently in the future.

I recommend the following structure for your report.

- [1 pt] Project Description: Write an updated **one paragraph** description of your project. Simply re-introduce the general area of application, intended tasks it will support and the intended user population.
- [4 pts] **Requirements Summary**: Briefly state key requirements from your system. Again, the goal here is to re-introduce the requirements developed in Parts 1 and 2, though it is OK if you introduce new or altered requirements here. Do not exceed one page in this summary.
- [50 pts] Prototype Description:
    - [5 pts] An overview of the prototype that you developed.
    - [20 pts] Each piece of the prototype in more detail, using screen shots or photographs to help illustrate the design.
    - [10 pts] At least one scenario from a user's perspective.
    - [15 pts] Rationale: why did you choose this prototype? What are its advantages and disadvantages with respect to your requirements and to your ability to evaluate it?
- [45 pts] Initial Evaluation:
    - [10 pts] Discuss your initial evaluation technique(s) and procedures. Tell us why you selected those techniques.

- [10 pts] Discuss the results of your initial evaluation, the feedback that you received from participants.
- [15 pts] Show screenshots (with descriptions) of the changes you made to the system in your next iteration of the design based on your initial feedback
- [10 pts] Discuss changes you would make in the future based on your initial feedback.

Project Part 3 Reflection (Individual Assignment)
Write a reflection (one page or less) about what you learned from working on this part of the project. Specifically state what went well, what went wrong, and what you learned from the process of working on this project. In all of our considerations, discuss what you would do differently if you were to do this part again. Note that this is the individual portion of what you are to turn in for the project.

Academic Integrity

The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. Please visit the Code of Academic Integrity or the Student Honor Council, for more information

Readings

Readings are to be done by class time the week they are listed on the schedule.

Reading Set 1: What is Design?
Whyte, W. H. (1980). *The Social Life of Small Urban Spaces*.
Whyte video on Vimeo: The picture didn't show up for me in Google Chrome, but works fine in Firefox... (Video is also found in non-print media section of Hornbake Library)

Bauhaus Design in a Nutshell: Bauhaus video:
http://www.youtube.com/watch?v=ZQa0BajKB4Q

Bauhaus What is Design: A video about what constitutes design:
http://www.youtube.com/watch?v=6U0nklFHzQI&list=PLNpgw0zcyFDRFPvTQQ7joM1MTufEIS1kn&index=1

Design Ability. Cross, N. (1990). The nature and nurture of design ability. *Design Studies*,*11*(3), 127-140.

Recommended

Design of Everyday Things. Norman, D. A. (2002). *Chapter 1: The Psychopathy of Everyday Things. The design of everyday things*. Basic books.

Reading Set 2: Understanding what users do

Grinter, R. E. (2005). Words about images: Coordinating community in amateur photography. *Computer Supported Cooperative Work (CSCW)*, *14*(2), 161-188.

Portigal, S. and J. Norvaisas (2012). "Never eat anything raw: fieldwork lessons from the pros." interactions **19**(4): 10-12.

Seidman, I. E. (1991). "Chapter 6: Technique Isn't Everything, But it is a Lot." Interviewing as qualitative research: A guide for researchers in education and the social sciences. New York, NY, Teachers College Press.

Sharp, H., Y. Rogers, et al. (2011). Sections 10.6 and 10.7. Chapter 10: Establishing Requirements for a Mobile Learning System. Interaction Design: Beyond Human-Computer Interaction (3rd Edition). West Sussex, UK, John Wiley & Sons Ltd.

Recommended

Ethnography. http://www.interaction-design.org/encyclopedia/ethnography.html
Personas. http://interaction-design.org/encyclopedia/personas.html
Usabilitynet.org. "Task Analysis." from http://www.usabilitynet.org/tools/taskanalysis.htm.

Project Readings: Food, Nutrition, and Technology

Infographic: Food and Nutrition Board (2012). Obesity: Complex But Conquerable. Accelerating Progress in Obesity Prevention: Solving the Weight of the Nation. I. o. M. o. t. N. Academies.
http://iom.edu/Reports/2012/Accelerating-Progress-in-Obesity-Prevention/Infographic.aspx

Parker, A. G., Harper, R., & Grinter, R. E. (2011). Celebratory health technology. *J Diabetes Sci Technol*, *5*(2), 319-324.

Choose One:

Grimes, A., Bednar, M., Bolter, J. D., & Grinter, R. E. (2008, November). EatWell: sharing nutrition-related memories in a low-income community. In*Proceedings of the 2008 ACM conference on Computer supported cooperative work* (pp. 87-96). ACM.

Parker, A., Kantroo, V., Lee, H. R., Osornio, M., Sharma, M., & Grinter, R. E. (2012, May). Health promotion as activism: building community capacity to effect social change. In *CHI* (pp. 99-108).

Parker, A. G., McClendon, I., Grevet, C., Ayo, V., Chung, W., Johnson, V., & Mynatt, E. D. (2013, April). I am what i eat: identity & critical thinking in an online health forum for

kids. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 2437-2446). ACM.

Choose One:
Parker, A. G. (2013). Designing for health activism. *interactions*, *20*(2), 22-25.

Foundation, R. W. J. (2013). Breaking Down Barriers to Healthy Food Options. New Public Health. R. W. J. Foundation. http://www.rwjf.org/en/blogs/new-public-health/2013/08/breaking_down_barrie.html

Robert Wood Johnson Foundation (2013). Leaders Share Winning Strategies to Reduce Childhood Obesity. New Public Health. R. W. J. Foundation. http://www.rwjf.org/en/blogs/new-public-health/2013/07/leaders_share_winnin.html

Baltimore grocery store: http://www.wbaltv.com/news/maryland/baltimore-city/Baltimore-community-gets-needed-grocery-store/-/10131532/19239316/-/amqrlnz/-/index.html

Reading Set 3: Applying our understanding of what users do
Chetty, M., Tran, D., & Grinter, R. E. (2008, September). Getting to green: understanding resource consumption in the home. In *Proceedings of the 10th international conference on Ubiquitous computing* (pp. 242-251). ACM.

Jameson, A., Gabrielli, S., Kristensson, P. O., Reinecke, K., Cena, F., Gena, C., & Vernero, F. (2011). *How can we support users' preferential choice?* Paper presented at the Proceedings of the 2011 annual conference extended abstracts on Human factors in computing systems, Vancouver, BC, Canada.

LeDantec, C. A. and W. K. Edwards (2008). Designs on dignity: perceptions of technology among the homeless. Proceedings of the twenty-sixth annual SIGCHI conference on Human factors in computing systems. Florence, Italy, ACM**:** 627-636.

Gellatly, A. W., Hansen, C., Highstrom, M., & Weiss, J. P. (2010, November). Journey: General Motors' move to incorporate contextual design into its next generation of automotive HMI designs. In *Proceedings of the 2nd International Conference on Automotive User Interfaces and Interactive Vehicular Applications* (pp. 156-161). ACM.

Recommended
Heyer, C., K. Hus, et al. (2012). "Interaction with the dirty, dangerous, and dull." interactions **19**(4): 19-23.

Bederson, B. B., & Quinn, A. J. (2011). *Web workers unite! Addressing challenges of online laborers*. Paper presented at the Proceedings of the 2011 annual conference extended abstracts on Human factors in computing systems, Vancouver, BC, Canada.

Reading Set 4: Ideation/Brainstorming Techniques

Frohlich, D. M., & Sarvas, R. (2011). *Hci and innovation*. Paper presented at the Proceedings of the 2011 annual conference extended abstracts on Human factors in computing systems, Vancouver, BC, Canada.

IDEO: Tim Brown on Change by Design (video)
http://vimeo.com/channels/ideo#5861210

IDEO: Birth 2 Business (video)
http://vimeo.com/channels/ideo#5824861

Kensing, F. & Blomberg, J. (1998). Participatory Design: Issues and concerns. *Computer Supported Cooperative Work* 7: 167–185. Form and Materiality in Interaction Design: A New Approach to HCI

Druin, A. (2002) The role of children in the technology design process. *Behaviour and Information Technology, 21*(1), 1-25.

Reading Set 5: Contextual Inquiry & Other Ideation Techniques

Mathew, A. P. (2011). *Art loop open: Designing for the intersection of art and technology in an urban public exhibition*. Paper presented at the Proceedings of the 2011 annual conference extended abstracts on Human factors in computing systems, Vancouver, BC, Canada.

Contextual Design. http://en.wikipedia.org/wiki/Contextual_design

Beyer, H. and K. Holtzblatt (1999). "Contextual design." interactions **6**(1): 32-42.

Holtzblatt, K. and D. Rondeau (2009). "Don't Ask Your Customer." from http://incontextdesign.com/articles/dont-ask-your-customer-comic/.

Holtzblatt, K. (2005). "Smart Automation in Everyday Life: The Public Rest Room." from http://incontextdesign.com/articles/smart-automation-in-everyday-life-the-public-rest-room/.

Reading Set 6: Prototyping

Prototyping Tools. (July 23, 2013). "GUI Prototyping tools." from http://c2.com/cgi/wiki?GuiPrototypingTools.

Beyer, H. (March 13, 2003). "Paper Prototyping in the Large." InContext. from http://incontextdesign.com/articles/paper-prototyping-in-the-large/.

Reynolds, G. (2011). Chapter 4: Crafting the Story. *Presentation Zen: Simple ideas on presentation design and delivery*. New Riders.

Walsh, G., Foss, E., Yip, J. & Druin, A. (2013). FACIT PD: Framework for Analysis and Creation of Intergenerational Techniques for Participatory Design. In Proceedings of the 31st International Conference on Human Factors in Computing Systems (CHI 2013). New York, NY: ACM.

Reading Set 7: Visual Design

We will have a sign up sheet for everyone to choose 3 articles (listed by article):
Kuang, C. (June 10, 2013). "The Design Battle Behind Apple's iOS7." Wired. from http://www.wired.com/design/2013/06/ios7_redesign/#slideid-151177.

McClurg-Genevese, J. D. (2005). "The Principles of Design." from http://www.digital-web.com/articles/principles_of_design/.

Adrianto, A. (2010). "10 Basic Visual Web Design Mistakes." from http://www.1stwebdesigner.com/design/basic-visual-web-design-mistakes/.

Mayer, D. (2010). "What Font Should I Use?": Five Principles for Choosing and Using Typefaces. Smashing Magazine. Freiburg, Germany, Smashing Media AG i.Gr. from http://www.smashingmagazine.com/2010/12/14/what-font-should-i-use-five-principles-for-choosing-and-using-typefaces/.

Turnbull, C. (2011). "Using White Space (or Negative Space) in Your Designs." from http://webdesign.tutsplus.com/articles/design-theory/using-white-space-or-negative-space-in-your-designs/.

Buchanan, R. (2000). "Good Design in the Digital Age." AIGA Journal of Design for the Network Economy **1**(1).

Spool, J. M. (2010). "Rabbis, Tropes, and Visually Consistent Designs." from http://www.uie.com/articles/rabbis_trope_visualdesign/.

Hassenzahl, M. (2012). "Everything can be beautiful." interactions **19**(4): 60-65.

Reynolds, G. (2011). Chapter 6: Presentation and Design: Principles and Techniques. *Presentation Zen: Simple ideas on presentation design and delivery*. New Riders.

Reading Set 8: Purposeful Design
Siegel, D. A. (2012). "The role of enticing design in usability." interactions **19**(4): 82-85.

Deterding, S. (2012). "Gamification: designing for motivation." interactions **19**(4): 14-17.

Hayes, G. R. (2012). "Taking action in your research." interactions **19**(4): 50-53.

Ullmer, B. (2012). "Entangling space, form, light, time, computational STEAM, and cultural artifacts." interactions **19**(4): 32-39.

Quintana, C. (2012). "Pervasive science: using mobile devices and the cloud to support science education." interactions **19**(4): 76-80.

Clegg, T., E. Bonsignore, et al. (2012). Technology for Supporting Life-Relevant Learning in Science. Interaction, Design, and Children, Bremen, Germany.

Recommended

Erickson, I., L. Nathan, et al. (2012). "Meta-making: crafting the conversation of values and design." interactions **19**(4): 54-59.

Hayes, G. R. (2011). "The relationship of action research to human-computer interaction." ACM Trans. Comput.-Hum. Interact. **18**(3): 1-20.

LeDantec, C. A. (2012). "Considering the rights (and wrongs) of community technology." interactions **19**(4): 24-27.

Course Schedule

Week	Date(s)	Activities	Due
1	September 5, 2013	Course Overview Activities - Class introductions - Course syllabus and expectations - Course hashtag - Course discussions - Project intro **Readings Set 1: What is design** readings & videos Activity - Watch videos and sticky note - Find examples of good design and bad design in building and/or outside	N/A
2	September	**Beth Bonsignore guest lecture**	Tweet one insight, quote, aha moment, or question

	12, 2013	**Readings Set 2** Understanding what users do Discuss readings and tweets Hierarchical Task Analysis Mock interviews (or something Beth B. inspired)	from each reading with the course hashtag - Try to tag your tweets according to the readings as well (e.g., #seidman)
3	September 19, 2013	**Project Readings: Food, Nutrition and Technology** Psyche Willions-Forbus guest speaker **Project Intro: Technology and Healthy Eating** Group formations Narrowing topic Initial Interview questions	**Short Assignment: CITI Training Due** Create a tweet about each of the readings **Project Part 0** (teams and topic) (Due on Friday at 2pm)
4	September 26, 2013	**Readings Set 3** Applying our understanding of what users do Technology in the future The needs of bathroom users	Tweets about the readings **Short Assignment:** Food and Nutrition Interview
5	October 3, 2013	*Short discussion based on Ch. 1 of Presentation Zen* Gar Reynolds TED talk: http://tedxtalks.ted.com/video/Story-Imagery-the-Art-of-21st-2 Project Work	
6	October 10, 2013	**Readings Set 4** Ideation/Brainstorming Techniques Project Part 1 short presentations Participatory Design Activity	**Project Part 1** Understanding the problem Post a tweet about each of the readings
	October 17, 2013	**Project Work** Project Part 2	
8	October 24,	**Readings Set 5**	**Short Assignment:**

	2013	Contextual Inquiry and Other Ideation Techniques Contextual Inquiry sticky noting	**Redesign of [DEPARTMENT NAME]'s Website** Post a tweet about each of the readings
9	October 31, 2013	**Readings Set 6** Prototyping Prototyping Hack Fest - Physical/paper prototyping - Digital prototyping	Post a tweet about each of the readings
10	November 7, 2013	**Reading Set 7** Visual Design [DEPARTMENT NAME] Website Visual Design revisions	**Project Part 2 Design Alternatives** **Short Assignment: Revision of Initial [DEPARTMENT NAME] Website Design** (Due Friday)
1	November 14, 2013	**Project Part 2 Poster Session**	
12	Scheduled: November 21, 2013	**Readings Set 8** Purposeful Design (Communities, Motivation, Learning) Noticeable Objects	**Short Assignment: Participatory Design Session Due**
13	December 5, 2013	*Discussion of Ch. 8-10 of Presentation Zen* Project Work	
14	December 12, 2013	Thursday December 6: HCI Design methods final presentations	**Project Part 3 Prototype Design and Iteration**