Instructor

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Course Overview

This is an introductory course on human-centered design. It has been designed to orient you to certain theoretical ideas while instructing key practical methods and tools for approaching interaction and experience design problems. This section of the course will have a few points of focus. These are: (1) design philosophy, (2) qualitative methods for data collection and analysis, (3) methods and tools for problem framing, brainstorming, prototyping, evaluating, and presenting design concepts. You will find the concepts and methods covered in this class to be of practical use. Professional interaction and experience designers have vetted and contributed to the course materials in an effort to ensure that the content we discuss and practice will be immediately applicable to you in your careers designing services, information systems, products, interfaces and user experiences, and so forth.

Overall Aims for the Course

- Explain the strengths and limitations of human-centered design
- Generate knowledge of how and why people use interactive artifacts/systems
- Design good technological artifacts/systems and experiences

Learning Objectives

- Collect user data using ethnographic techniques, interviews, and secondary research
- Identify themes/patterns in qualitative data by affinity diagramming
- Generate cogent, actionable design insights from data
- Conduct secondary research using sound digital resources (e.g. Google Scholar, ACM DL)
- Use relevant visual, information, and interaction design principles
- Communicate design concepts formally (presentations) and informally (via Slack or email)
- Sketch artifacts and interactive sequences using analogue (paper + pen) tools
- Create hi-fidelity prototypes of mobile and web applications using Adobe XD

Required Books & Materials

Universal Methods of Design (Martin & Hanington, 2012). There are two versions of this book, one of which is a 'pocket' edition. This class will make use of the full size, hardcover edition and not the pocket edition. We will also make use of Designing with the Mind in Mind, 2nd Edition (Johnson, 2014). There will be two online quizzes (on Canvas) covering concepts from *Designing with the Mind in Mind*. You will have two chances to take each quiz.

Sketchbook and pen(s). You are welcome to purchase whatever sketchbook and pen(s) you would like for this course. However, we will talk a little about both during the first week of class. A great, local store for this purpose is Uncle Eli's Artist Emporium. They have a terrific selection of books and pens. You get graded for having and using (or for not having/not using) your sketchbook.

Note: There will be additional course readings posted to canvas as PDFs.

Other Useful Resources

Purdue Online Writing Lab (OWL)

How Different Artifacts Contribute to your Final Grade:
Your grades will be based on the following breakdown. However, elements that are harder to quantify can also influence your final grade.

Artifacts	**Weight**
Discussion Forums + Online Quizzes	10%
Sketches + Prototypes	20%
Research and Design Projects	40%
Final Project	20%
Attendance + Participation	10%
Total	**100%**

All assignment/project submissions will be through Canvas, which allows me to set time-specific deadlines for submitting work. I have set up the site so that the assignment dropboxes remain open throughout the semester. However, the submission deadlines are still date/time specific so that I'll be able to see if/when an assignment comes in late. **Late assignments lose points, so be sure you submit your work on time.** If there are extenuating circumstances that prevent you from turning in work on time, then you need to let me know as soon as you find out so that we can figure out a way to move forward with your submission.

A note on academic integrity. Penn State's Code of Conduct & Student and Student Organization Conduct Procedures (revised 8/23/17) describes academic integrity as:

> "*Academic integrity is the pursuit of scholarly activity in an open, honest and responsible manner. Academic integrity is a basic guiding principle for all academic activity at The Pennsylvania State University, and all members of the University community are expected to act in accordance with this principle. Consistent with this expectation, students should act with personal integrity, respect other students' dignity, rights and property, and help create and maintain an environment in which all can succeed through the fruits of their efforts. Academic integrity includes a commitment not to engage in or tolerate acts of falsification, misrepresentation or deception. Such acts of dishonesty violate the fundamental ethical principles of the University community and compromise the worth of work completed by others.*
>
> *Violations of Academic Integrity include, but are not limited to, copying, plagiarism, fabrication of information or citations, facilitation of acts of academic dishonesty by others, unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, and tampering with the academic work of other students.*" (2017, p. 9)

This class involves primary and secondary data collection and analysis as well as analytical writing assignments and design projects. All this stuff presents opportunities for most of the violations listed above. Don't commit any of them. You won't gain anything, and you stand to lose a lot.

If at any time you feel overwhelmed by the work in this (or other) course(s), then please come talk to me or take advantage of some of the other support services offered here at Penn State (http://studentaffairs.psu.edu/counseling/).

Final Grades
Cutoffs for final grades are approximately as follows:

Letter	Value
A	95 or more
A-	90-94
B+	86-89
B	84-86
B-	80-84
C+	76-79
C	74-76
C-	70-73
D	60-69
F	59 or less

Course Conduct
The key to doing well in this class is to attend each session and complete the assignments to the best of your ability. Do well, and take pride in your work.

Time. For every hour of lecture, you may want to set aside three hours of time outside of class to read, sketch, and do other activities. Some weeks you may have to set aside more or less depending on the nature of the work. You are responsible for completing all readings prior to the start of the class in which they will be discussed. Our discussions will be much richer, and you will all take away a lot more from them if you read each text, take notes, and come to class with a few questions or comments ready to share.

Attendance. Please note that if you miss a class, it is up to you to find out what you missed by asking your classmates. You are also responsible for checking Canvas daily to stay aware of important announcements or schedule changes. Two missed days won't impact your grade, but if you miss three or more, then, extenuating circumstances notwithstanding, your final grade will go down. You can't get much out of the class if you're not present.

Tech Use This is an IST class, and, as such, we will make use of technological tools during class sessions.

However, we have to establish and maintain a standard of courtesy whereby we use laptops and/or smartphones *only* for activities related to the course readings, discussions, or design activities. If the instructor, instructional assistant, or students are presenting, then there should be no open laptops or phones unless otherwise stated in class.

Course Design

This version of 331 has been iterated from previous years' designs. It draws on ideas from Eun Kyoung Choe, who now teaches and does research at the University of Maryland, and Frank Ritter, who currently teaches here at PSU. I've also checked it against publicly available human-centered design and design thinking syllabi developed at other universities to ensure that the content is competitive. I also recruited a team of practitioners to work with me to curate a core set of methods and tools and other resources for the course. They are:

- Abdelhady Abuolba (Master's Student at Penn State University College of IST)
- Emily Baumgartner (UX Researcher at Innovatemap)
- Barb Belsito (Product Designer at Lyft)
- Adam Williams (UX Designer at IBM)
- Michael Moreau (Interaction Designer at GE Digital)

Some of these folks may teleconference in as guest speakers throughout the semester. I will update the syllabus when dates have been arranged, and we will modify our coursework as needed. I have planned the course to provide the flexibility we need to accommodate guest speakers.

I developed this course for you to work independently and in groups. Conversations with current practitioners and my own background in learning experience design lead me to believe that mixing these different ways of working reflect the realities of being a design practitioner in a variety of domains (interaction, experience, learning, architecture, graphic, and so forth). Moreover, much of the work overlaps. You'll start some projects before finishing others. This can be frustrating and overwhelming. I understand that both as the course designer and as someone who experiences such overlap first hand. Figuring out effective strategies for managing time and for dealing with complex work is an important (though for the most part tacit) part of the course. I will do my best to share insights and manage these things as they come up.

Part of doing group work involves project management, work division/delegation, and so forth. You'll be working with people for the rest of your life, and so you need to become adept both at carrying your own weight and holding others accountable for carrying theirs. This is important, everyone. For each pair and team project you will be completing peer evaluations for your partners/teammates and those evaluations will be factored into individual grades. It is possible for each member of a pair to get different grades if one person does most or all of the work. Same with group work. If three people out of four do most of the work, the fourth person should not expect to earn the same grade.

Finally, while I do have concrete ideas about the requirements of the different activities we will engage in this course, my standpoint as a designer requires me to acknowledge that these frameworks can and should change. I will provide you with guidelines for the work you do in this class. You will have a sense for how I might go about grading your work, and thus you will have a sense for what you need to do in order to do well. But these guidelines are flexible. In the same way that I might iterate on the syllabus, I also might iterate on guidelines for the work that you do. This does not mean I have unrealistic

expectations for what you can/will do in response. It means my thinking has changed based on the natural progression/evolution of the course. When things change, I will do everything I can to make sure that the changes are fair and that they do not result in any undue hardship for you.

If you have questions or concerns about your ability to do the work in this class then come see me asap. Do not wait until the middle or near-end of the semester to come talk to me.

Assignments
There are a few core assignment types in this course. They are: discussions and online learning content, sketching and prototyping, and research and design projects. I want to give you a brief overview of what to expect from each.

- Sketches are exactly what they sound like. We'll be leaning on prompts from great workbook containing sketching exercises for experience and interaction designers. As we get further along in the semester you'll learn how to use Adobe XD to sketch higher fidelity prototypes of your designs, but we'll get there after you develop competency with pen and paper.

- Research and design assignments cover a wide range of activities, from observing and interviewing people (while taking pictures, videos, and field notes) to writing up descriptive narratives and transcripts on the basis of these experiences. This is a lot of work, but I will guide you through all of it and provide you with examples so that you always have an idea of what you need to do to do well.

- You'll practice pitching ideas. These are team-based. Presenting is an important part of practice. You'll constantly be presenting ideas to colleagues and managers and clients and so you need to become adept at summarizing your design work, research insights, and plans for next steps with engaging slides. Presentations are going to be short so that we can accommodate all the groups in the class, but that doesn't mean they're any less important. A one-minute presentation to a manager can make the difference between more responsibility or a raise or a promotion and stagnating in your current position.

- There will also be a number of in-class assignments that count towards attendance and participation. In most cases, these will serve as prefaces to larger submissions. For example, you'll sketch a set of team protocols for doing design work or rapidly prototype a productivity app *before* actually working together or submitting a prototype as an assignment. In some cases, though, these activities will leverage designerly techniques to synthesize in-class readings or prompt you to reflect on what doing design means to you.

Course Schedule

Week	Topics	Readings	Due
1	Course Introduction	*Syllabus*	
	Student Introductions (Good/Bad Design)		Personal Introduction Presentations
2	Human-Centered Design, The Value of Design, Sketching a Design Process,	*What is design?* (Heskett) and, *HCD Considered Harmful* (Norman)	Sketchbook (in class), Design Process Sketch (in class), and Sketches 1
	Getting Started, Interpreting Design Briefs, 10+10, Worst Possible Idea	*CHI Student Design Challenge Brief* *Our Perception is Biased* (Johnson, 2014)	Design Briefs (in class), Sketches 2
3	Problem setting, Reflective Practice, RDP1 Design Brief	*The Design Process* (Schön), *Donald Schön: Learning, Reflection and Change (infed.org)*	Problem framing (in class), Sketches 3, Discussion 1,
	Designing In Teams, Team Protocols, RDP1 Brief Released	*Why Teams Don't Work* (Coutu), *Designing Together* (Cross) *Our Vision is Optimized to See Structure* (Johnson, 2014)	RDP1 Team Protocols (in class), Sketches 4, Discussion 2
4	Design Presentations, Design Critique	*Example Presentations* (Canvas), *A Practical Guide to Running Effective Design Critique (Royer & Yu)* *Four Things Working at Facebook has Taught me About Design Critique (Christensen)*	
	Identifying Secondary Sources, Building Exemplar Collections	*Artifact Analysis* (Martin & Hanington)	Sketches 5, Designing with the

All details in the syllabus are subject to iteration.

		We Seek and Use Visual Structure (Johnson, 2014)	Mind in Mind Quiz 1 (online)
5	RDP1 Presentations		RDP1 Presentations (all groups),
	RDP1 Presentations	*Our Color Vision Is Limited* (Johnson, 2014)	
6	Fieldwork Overview, Team Protocols Redux, RDP2 Design Brief, RDP1 Reflections	*Ethnography* (Martin & Hanington), *Rapid Ethnography* (Design Exchange), *User Observation* (Design Exchange)	Exemplar Collection
	Interviews	*Interviews* (Martin & Hanington), *1:1 Interview* (Design Exchange), *Prepping for Stakeholder* *Getting People to Talk* (Video IIT Institute of Design) *Our Peripheral Vision Is Poor* (Johnson, 2014)	RDP1 Individual Reflections, Sketches 6, RDP2 Team Protocols
7	Adobe Photoshop Basics		Interview Protocol
	Adobe XD Basics, Prototype 1	*Adobe XD Forum(s)*, *Reading is Unnatural* (Johnson, 2014)	Prototype 0 (in class)
8	RDP2 Presentations		RDP2 Presentations (all groups)
	RDP2 Presentations, Prototyping Brief 2	*Our Attention is Limited; Our Memory is Imperfect + Limits to Attention Shape Our Thought and Action* (Johnson, 2014)	
9	***spring break placeholder***		

	spring break placeholder		
10	Smartphone videography	*tbd...*	
	Video editing (iMovie)	*tbd...*	
11	Final Project Intro, Prototype 2	*Final Project Brief, Team Protocols*	RDP2 Individual Reflections
	Thematic Analysis, Affinity Diagramming, Final Team Protocols, Design Process Sketch 3	*Thematic Analysis* (Mortensen), *Affinity Diagramming; Content Analysis* (Martin & Hanington)	Design Process Sketch 3 (in class), Prototype 1, Interview Report
12	Personas	*Personas* (Nielsen, n.d.)	Prototype 2, Final Team Protocols
	Scenarios, Design Fictions	*Scenarios* (Martin & Hanington)	Final Project 10+10
13	Worst Possible Idea, Prototype 3	*Final Project Update Presentations*	Affinity Diagram
	Heuristic Evaluation	*Discount Usability* (Nielsen), *Heuristic Evaluation* (Martin & Hanington), *Heuristic Evaluation* (Design Exchange)	Designing with the Mind In Mind Quiz 2 (online)
14	Think-aloud protocol	*Think-aloud Protocol* (Martin & Hanington) *Experience Prototyping* (Design Exchange)	Prototype 3, Final Project 10 plus 10
	Final Project Studio	*Final Project Studio Day*	Final Project Progress Report (all groups)
15	In-class presentations		Final project presentations *and* one sheets (all groups)
	In-class presentations		Individual final project reflections
16	Design process videos	*What is the design process?* (Aquino)	Design process videos (all groups)

	Design process videos		

Readings

The following readings are also linked (and in some cases available for download) on the course site. Readings with a '*' are available on Canvas. All others should be available via the links provided. If there are issues with the links, then please reach out to me and let me know so that I can fix things.

1:1 Interview. (2017). Retrieved from: https://www.thedesignexchange.org/design_methods/339

Affinity Diagramming. (2017). Retrieved from: https://www.thedesignexchange.org/design_methods/41

Aquino (2017, June 3). What is the design process? Retrieved from https://medium.com/intro-to-digital-product-design/lecture-2-accidentally-uploaded-from-phone-c23ef4aca05c

*Carspecken, P. (1996) Critical Ethnography in Educational Research: A Theoretical and Practical Guide. New York, NY: Routledge.

Christensen, T. (2016) Four Things Working at Facebook Taught Me About Design Critique. Retrieved from goo.gl/5A7xSK

Coutu, D. (2018) Why Teams Don't Work. Retrieved from: https://hbr.org/2009/05/why-teams-dont-work

*Cross, N. (2011) Design Thinking: Understanding How Designers Think and Work. New York, NY: Bloomsbury Academic.

*Dorst, K. (2015) Frame Innovation: Create New Thinking By Design. Cambridge, MA: MIT Press.

Experience Prototyping (2018) The Design Exchange. Retrieved from: https://www.thedesignexchange.org/design_methods/13

Getting People to Talk (2009) Retrieved from: https://vimeo.com/1269848

*Heskett, J. (2002) Design: A very short introduction. New York, NY: Oxford University Press.

Heuristic Evaluation. (2017). Retrieved from: https://www.thedesignexchange.org/design_methods/185

Infed.org (2019) Donald Schon: Learning, Reflection, and Change http://infed.org/mobi/donald-schon-learning-reflection-change/

Johnson, J. (2014) Designing with the Mind in Mind (2nd ed.). Waltham, MA: Morgan-Kaufman.

Kolko, J. (2015) Design Thinking Comes of Age. Harvard Business Review. Retrieved from: https://hbr.org/2015/09/design-thinking-comes-of-age

Martin, B., & Hanington, B. (2012) Universal Methods of Design: 100 Ways to Research Complex Problems, Develop Innovative Ideas, and Design Effective Solutions. Rockport Publishers.

Mortensen, D. (2018) How to do a thematic analysis of user interviews. Retrieved from goo.gl/XL7Gv5

Nielsen, L. (n.d.). Personas. In The Encyclopedia of Human-Computer Interaction (2nd ed.) Retrieved from https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/pe

All details in the syllabus are subject to iteration.

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Norman, D. (2005) Human-Centered Design Considered Harmful. *Interactions 12*(4), pp. 14-19. Retrieved from: https://dl.acm.org/citation.cfm?id=1070976

Preparing for UX stakeholder interviews. (2016). Retrieved from https://www.interaction-design.org/literature/article/preparing-for-ux-stakeholder-interviews

Rapid Ethnography. (2017). Retrieved from: https://www.thedesignexchange.org/design_methods/339

User Observation. (2017). Retrieved from: https://www.thedesignexchange.org/design_methods/236